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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

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NASA FLIGHT RESEARCH CENTERED AT EDWARDS, CALIFORNIA

The National Aeronautics and Space Administration is reorienting its aeronautical flight research program and will conduct all but a small part of its test flight operations at the NASA facility, Edwards, California.

Simultaneously, the name of the California site is changed to reflect its mission. Previously called the High Speed Flight Station, the facility now is named the NASA Flight Research Center.

Reasons for the reorientation are the need to conduct high speed test operations away from congested airlanes and built-up areas, and the economy which will result in centralization. The Flight Research Center is located on a remote area of the California desert.

Both the Langley Research Center in Langley Field, Virginia, and the Ames Research Center, Moffett Field, California, will conduct flight research in the low-speed ranges, mainly with vertical takeoff and landing (VTOL) and short field takeoff and landing (STOL) craft. The Lewis Research Center in Cleveland, Ohio, will continue its small-scale flight program using low-speed propeller and jet aircraft. Currently, the Lewis program involves research in zero gravity.

A study is now under way to determine which flight research projects at Langley and Ames will be transferred to the Flight Research Center. Most high performance aircraft now at these centers will be returned to the military or transferred to the Edwards facility.

# # #

Stan Miller

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
EDWARDS, CALIFORNIA

Release Number 11-59
November 25, 1959

FOR IMMEDIATE RELEASE

HISTORY OF THE NASA FLIGHT RESEARCH CENTER

- Introduction -

On March 3, 1915, President Woodrow Wilson endorsed a Congressional Bill founding the National Advisory Committee for Aeronautics. Misgivings about the bill's effect on the President's cherished neutrality, even in the face of rapid advancement of aeronautical science by Europeans, fostered a reluctance in executive and congressional circles toward either Army or civilian advancement in aviation. Nevertheless, a little more than eleven years since the first sustained controlled power airplane flights by Orville and Wilbur Wright at Kitty Hawk, N. C., the passage of the bill inaugurated an era of civilian governmental participation by an independent agency in the infant science of aviation. Forty-three years later, on October 1, 1958, the NACA became the nucleus for another organization, marking not the end of an era of accomplishment, but rather its expansion both in scope and responsibility.

The National Aeronautics and Space Administration has become the responsible agency for all government aeronautics

and space programs except "activities peculiar to...development of weapon systems, military operations, or the defense of the United States".

The entire existence of the NACA, which spans the modern history of aviation, was dedicated to "..the scientific study of the problems of flight, with a view to their practical solution." The story of its growth parallels that of aviation progress.

In its earliest days, the NACA had no laboratories of its own; its investigations were carried out through institutions such as the Massachusetts Institute of Technology and Cornell University. Its establishment and 1915 budget, of $5,000, was in the form of a rider on a Navy appropriation bill. In 1916, provisions were made for the construction of the first NACA installation at Langley Field, Va., named after aviation pioneer Samuel Pierpont Langley.

By 1938, the agency had grown from its first employee, Dr. John F. Victory, now Assistant to the NASA Administrator, and its modest budget to an organization of 430 employees, with a capital investment of $3 million and appropriations amounting to $1.3 million. Up to this time the NACA was responsible for these major achievements:

Development and use of a propeller research tunnel which resulted in the NACA cowling to streamline engines and add speed to aircraft.

Development of a family of airfoils, used by more than 95% of aircraft in the world throughout the 1930's.

Development of a system for nacelle placement in multi-engine aircraft to achieve least drag in flight.

Early research in jet propulsion.

Development of a series of tunnels, one of which could simulate speeds approaching that of sound.

In the next few pre-war years, the Ames Aeronautical Laboratory in California, and the Flight Propulsion Research Laboratory at Cleveland, Ohio, were conceived and put under construction. The war effort of the NACA necessitated a turnabout from its traditional mission of basic research; it became a mission of full time applied research to make existing aircraft better. Every fighter airplane operated by the United States during the war went through tests to improve their performance.

By the time of the Japanese surrender in 1945, the three laboratories represented an investment of $85 million compared to that of only $12 million for a single center in 1939.

The appearance of extremely high speed aircraft during the last months of the war forecasted the mission and need for what is now the National Aeronautics and Space Administration Flight Research Center at Edwards, California.

- The NASA Flight Research Center -

The history of the NASA Flight Research Center is intimately connected with the history of the research airplane program, first conceived by John Stack of the Langley Aeronautical Laboratory, and begun in 1944.

From its conception as a device for obtaining essential information about the problems of transonic and supersonic flight, the specially designed and instrumented airplane has become one of the most valuable tools of aeronautical research. So rapid and so spectacular have been the performance gains that it may be difficult to recall that, only 15 years ago, even the most advanced airplanes were limited by "compressibility" to Mach numbers below .85. Now, the latest of the series, the X-15, stands ready to attain speeds up to 4,000 miles an hour and altitudes up to 100 miles, the fringe of outer space. Yet, in the last months of World War II, even the newest of the United States jet fighters were limited to speeds in the region of Mach 0.8 and 0.85, obtained by dives at considerable risk to the pilot and to the aircraft.

Contracts for the first two research airplanes were let in 1944 to the Bell Aircraft Corp. for the rocket powered X-1, and to the Douglas Aircraft Corp. for the turbojet powered D-558, later known as the Skystreak. The bullet shaped X-1, of which two were originally constructed, was the first to reach the stage of flight testing. Early in 1946, after successful glide tests at Pinecastle Air Force Base, Florida, it was decided to conduct powered flights where an extended landing area was available, since the short powered phase of flight necessitated a glide or dead-stick landing.

Edwards Air Force Base, then known as Muroc Air Force Base, was an ideal location for the X-1's flights, not only because of the natural dry lakebed as a landing site, but because its remoteness and favorable climate offered additional advantages for a program of this type. Accordingly, in October, 1946, the X-1 was shipped to Edwards, accompanied by 13 NACA engineers, instrument technicians and test observers. The extended research program, under the direction of Walter C. Williams, former chief of the original High-Speed Flight Station, was begun with the first successful power flight of the X-1 in December, 1946. At that time, the NACA unit under Mr. Williams was considered a unit of the Langley Laboratory detailed on temporary assignment to Muroc.

By June, 1947, the manufacturer, Bell Aircraft Corp. had sufficiently demonstrated that the airplane was airworthy up to a Mach number of 0.8, as required by contract. A few days later, a meeting at Wright-Patterson Air Force Base disclosed that the Air Force would use one of the X-1 airplanes to exploit the maximum capabilities of the new aircraft, while the NACA would operate the other as part of a planned research program. The NACA group at Edwards was assigned permanent duty at the desert test site to furnish engineering and instrumentation assistance for the Air Force in the cooperative program.

The X-1 airplane assigned to the Air Force was delivered in August, 1947, but it was not until March 1948 that the NACA X-1 was available for tests. The earlier Air Force flights

resulted in the first supersonic flight by Capt. Charles E. Yeager on October 14, 1947. The first supersonic flight by a civilian in the X-1 occurred on March 4, 1948, made by NACA pilot Herbert Hoover.

Major General Albert Boyd summed up the NACA-USAF X-1 program by writing that "The end results of the high-speed flight research programs conducted jointly made available to aircraft designers, for the first time in the history of flight testing, sorely needed information which served a dual purpose. The rapid but sketchy USAF portion of the program supplied the answers which went toward determining the military applicability of a research aircraft, whereas the lengthy but detailed NACA program confirmed or refuted wind tunnel data and at the same time provided information which would permit aircraft designers to avoid dangerous flight characteristics in future military and civilian aircraft of a more advanced design."

It is interesting to note that even before the X-1 had completed its NACA flight program, its earlier flights had broken the sonic "barrier" and encouraged operational aircraft to be designed and operated at sonic speeds in dives.

Meanwhile, the D-558-I Skystreak had arrived at Edwards and was flown for the first time in mid-March 1947. It was engaged in manufacturer's trials until August 1947, when a world speed record of 640 mph was set by Lt Colonel Marion Carl of the U. S. Marine Corps.

Two D-558-I airplanes were delivered to the NACA at Edwards in the fall of 1947. These airplanes, being jet powered, did not have the speed potential of the rocket powered X-1, so were used extensively for research up to Mach numbers of about 0.9. The two experimental airplanes were used in combination as the programs developed, the D-558-I for heavier work and more sustained flights and the X-1 used for investigations of higher speeds.

In one of the D-558-I airplanes, NACA pilot Howard Lilly lost his life in a take-off crash on May 3, 1948. The drive leading up to the main building at the Flight Research Center is named Lilly Avenue in his honor.

The second phase of the D-558 program began in 1949 with the delivery of two jet and rocket powered D-558-II airplanes to the NACA at Edwards. Besides investigations in the field of dynamic lateral stability, a highlight of this program occurred on November 21, 1953, when NACA pilot Scott Crossfield exceeded twice the speed of sound in a modified rocket powered D-558-II.

Also, during 1949 and the first months of 1950, the X-4, a tailless swept-wing, jet propelled airplane, was undergoing contractor trials by Northrop Aircraft, Inc. It was assigned to the NACA at Edwards for research in 1950. Because of stability difficulties at high speeds, the X-4 was probably the only one of the research airplanes in which the full potential performance could not be realized.

By this time, the NACA Muroc Test Unit had moved from its makeshift facilities in an Air Force hangar to a small hangar and lean-to buildings leased from the Air Force. In the fall of 1949, the unit, numbering about 60 persons, was permanently established at Edwards as the High-Speed Flight Station.

From 1950 to 1953, a variety of projects was undertaken. These included, in 1951, flight research with the Bell X-5, a unique aircraft capable of varying its wing-sweep in flight. In 1952, the Convair XF-92A, the United States first delta wing aircraft was the subject of detailed investigations of pressure distribution on its surfaces. The research done on the XF-92A by the Station, with wind tunnel tests, were instrumental in the development of the fence configuration now seen on the F-102 airplanes. Also, in a concurrent program requested by the Air Force and Northrop Aviation, Inc., structural failures in the F-89 were the subject of intensive tests using strain gages to measure aerodynamic loads in flight.

By 1953, it was apparent that the work done at Edwards for the NACA flight research program would continue indefinitely. Accordingly, a Congressional appropriation was obtained for construction of hangar and office facilities and lease of 175 acres at Edwards Air Force Base. Construction was begun in 1954 on the main building with 73,243 sq. ft. floor area, and on two hangars with a combined area of 73,849 sq. ft. The Station compliment at this time had increased to 222 employees.

The years 1953 and 1954 saw an increase in the scope and amount of work done in flight research. During this period, a Boeing B-47 was heavily instrumented for testing of loading effects and stability and control. Later, the same airplane was used in connection with the noise problems of jet aircraft. NACA engineers cooperated with the Air Force and the Boeing Company in a similar program with a Boeing B-52, augmenting the work already done with the B-47 and extending research knowledge well into the transonic speed ranges. Initial flight tests of the Bell X-1A series airplanes were made during 1953. These rocket powered aircraft differed from the original X-1 in cockpit configuration and in rocket fuel capacity. Soon after the X-1A reached a record speed of Mach 2.5 in December, 1953, the X-1A and the X-1B airplanes were delivered to the NACA at Edwards as part of a cooperative program between the manufacturer, the Air Force and the NACA. The X-1A was lost in an explosion prior to air launch in November 1956. Subsequent investigations by NACA engineers revealed the cause of the X-1A explosion as a faulty gasket on the liquid oxygen storage tank. The explanation was also found to apply to similar explosions of the X-1C, the X-1D and the X-2 while undergoing Air Force and manufacturers trials. This faulty gasket had been the cause of the loss of four experimental aircraft, two B-50 mother-ships, and had cost two lives.

The X-1B, however, continued to yield research data until its retirement to the Air Force Museum at Wright-Patterson Air Force Base in January, 1959. One of its later contributions was the flight testing of reaction controls at high speeds and altitudes. These controls are now incorporated in the design of the North American X-15.

The problem of inertia coupling was first discovered in flight tests of the Douglas X-3, a stilleto shaped research aircraft delivered to the NACA at Edwards in 1954. Even before the NACA analysis of this problem was completed, similar problems were uncovered in the F-100, then in the process of becoming operational with the Air Force. An intensive program between the NACA, Air Force and North American Aviation, Inc. resulted in an understanding and subsequent remedy of the problem

Installed in the new facilities and renamed the High-Speed Flight Station in the summer of 1954, the NACA team continued its research programs throughout 1955, 1956 and 1957 on such diversified aircraft as the Douglas Skyrockets, the B-47, B-29, F-100, F-101, F-102, F-51, X-3, X-1B, and the X-1E, a modified version of the original X-1. In 1956 and 1957, the Station received for testing the F-104 and the F-107. Later, other models of these aircraft were delivered, some of which are still being used.

In the last two years, many Station employees have been concerned with the development of the X-15 rocket airplane, the

latest in the X series. As with other X airplanes, the X-15 will be the subject of exhaustive NASA tests at record speeds and increasingly high altitudes. More recently, a development phase of the NASA's Project Mercury has been assigned to the Edwards facility.

The transition of the NACA to the National Aeronautics and Space Administration was accomplished in October of 1958. In September, 1959, the Station was officially designated the NASA Flight Research Center. Also in September, Mr. Paul F. Bikle succeeded Walter C. Williams as Director of the Center. Now at a strength of 328 employees, the Center's facilities will be utilized for all the high-performance aircraft testing within the National Aeronautics and Space Administration. The Flight Research Center will, in the future as in the past, continue as a focal point for the nation's most advanced aircraft research programs and the scene of historic advances in evolution of aeronautical and space science.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

RELEASE NUMBER 21-60
April 29, 1960

FOR IMMEDIATE RELEASE

HISTORIC RESEARCH AIRCRAFT RETIRED

The rocket aircraft that first carried a civilian pilot beyond the once-feared "sound barrier" in 1948 has been retired to a place of honor at the site of its historic flights, The National Aeronautics and Space Administration Flight Research Center, Edwards, California.

The XS-1 Number 2, modified to its present configuration and redesignated the X-1-E in 1955, begins official retirement today in an atmosphere of expectancy as its successor, the X-15 manned rocket vehicle, continues initial research flights in the NASA-USAF-Navy sponsored program designed to explore unknown regions of flight at speeds of 4,000 miles per hour and altitudes over 50 miles. A comparison of the two rocket airplanes, each representing an ultimate in aeronautical advancements according to their time, shows that the X-15 has already exceeded the X-1-E top speed of 1460 miles per hour by nearly 300 miles per hour. Design altitude capability of the X-15 is nearly three times the X-1-E's mark of about 90,000 feet.

The long and useful career of the X-1-E began in 1944 when contracts for two XS-1 research airplanes were awarded to Bell Aircraft Co. by the Air Force and the National Advisory Committee for Aeronautics (NACA), parent organization of NASA.

Conceived as a device for obtaining essential information about the problems of transonic and supersonic flight, the research aircraft series startled the world when Capt. Charles Yaeger, Air Force project pilot, flew the XS-1 Number 1 through the "sound barrier" October 14, 1947. NACA pilot Herbert Hoover, flying the XS-1 Number 2, became the first civilian to fly faster than sound on March 4, 1948.

In 1955, with a record of 36 rocket flights by NACA pilots, the XS-1 Number 2 made its first flight as the X-1-E with NACA pilot Joseph A. Walker, now NASA's X-15 project pilot. Modifications made by NACA increased the aircraft's performance capabilities and prompted the redesignation of the airplane. The modifications included the installation of a thin, straight wing; increased fuel capacity; ejection seat; a new canopy configuration; and an improved fuel system.

In addition to the invaluable research performed both as the XS-1 Number 2 and X-1-E, the aircraft is significant in that it was in service longer than any of the "X" series research vehicles. With a total of 88 rocket flights, all air-launched from a mothership, the airplane flew from December of 1946 to November 1958. Its last flight was the last rocket aircraft flight in the United States until the X-15 made its first powered flight in September 1959.

Now mounted in flight attitude at the entrance to the NASA Flight Research Center, the compact rocket airplane will serve as a reminder of the countless hours of planning and work upon which increasingly rapid advancements in the techniques of flight are based.

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NASA
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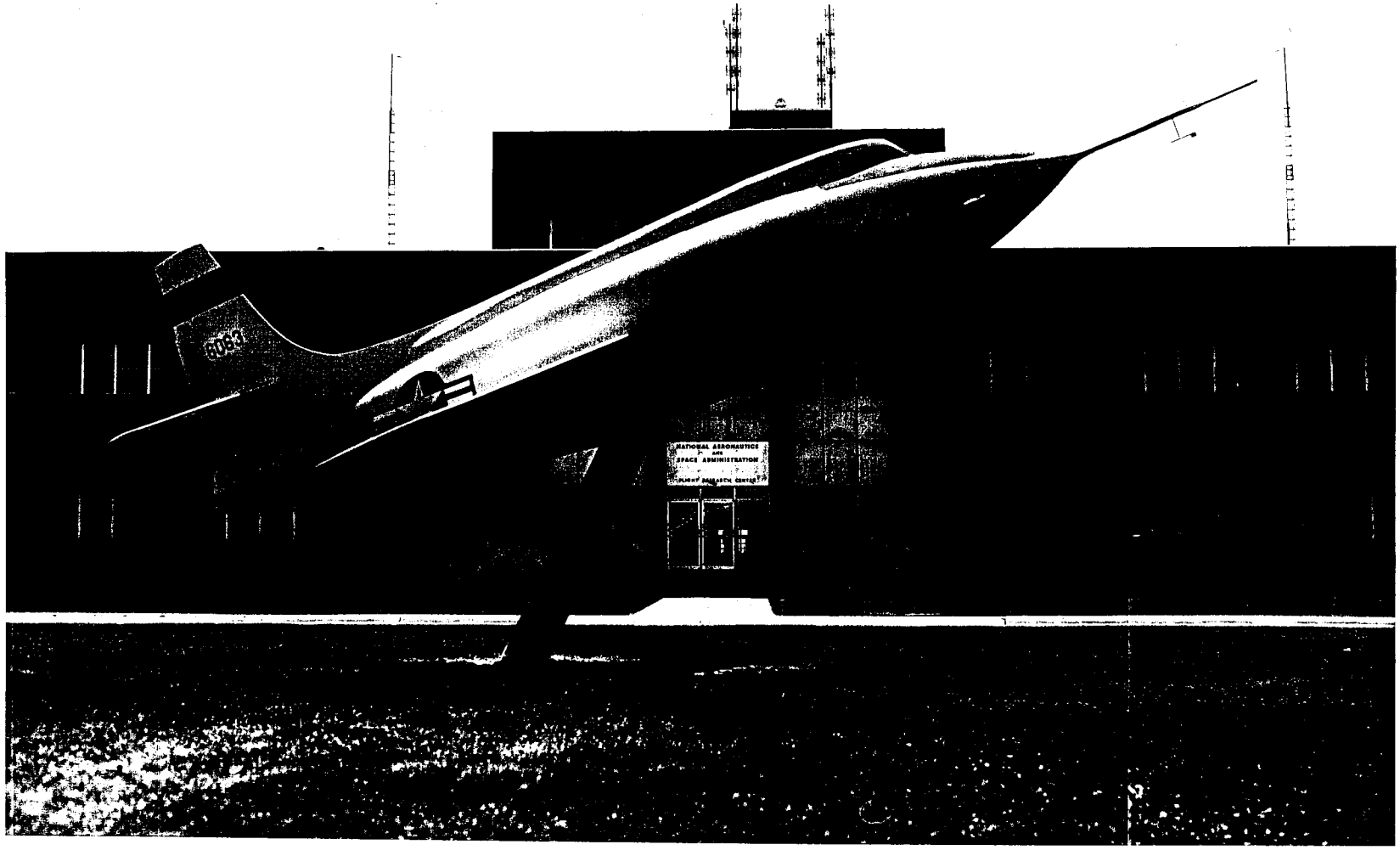

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Flight Research Center
Edwards, California

FOR RELEASE: Tuesday A.M.'s
May 9, 1961

Release No. 15-61
61-98 Hq.

X-15 TO PROBE SPEEDS TO MACH 5.1

Edwards, Calif. - Another significant research flight will be attempted with the X-15 rocket airplane within the next few days. This mission will be another step in seeking maximum velocities and altitudes in the joint NASA-Air Force-Navy research project being carried out at Edwards.

Primary objectives of the next flight are to obtain aerodynamic stability and control data at a speed five times as fast as than sound, Mach 5.1, and heating and performance information.

The flight, under direction of the National Aeronautics and Space Administration Flight Research Center, is programmed for 3,400 mph - - almost a mile a second - - and some 300 mph faster than the X-15 flight of March 30 this year.

NASA research pilot Joseph A. Walker will be at the controls of the rocket-powered airplane during the forthcoming mission. Walker's last flight in the North American Aviation Inc. - built X-15 resulted in an altitude of 169,600 feet. He has made six successful flights since the first X-15 entered the government research phase in March 1960.

Walker and the X-15 will be launched from an Air Force B-52 jet carrier aircraft at 45,000 feet near Mud Lake, about 200 miles north of Edwards, Calif. The launch point is some 60 miles farther from Edwards than previous launches made over Hidden Hills Dry Lake.

After launch, the pilot will start the rocket engine and immediately advance the throttle to the full 57,000 pound thrust level. After establishing the proper climb attitude, he will push over to zero-G, a condition of weightlessness, at about 60,000 feet.

After 72 seconds burning time, he will shut down the engine at an altitude near 100,000 feet, attaining the maximum speed at

this point. The zero-G condition will continue until the X-15 reaches its peak altitude of 120,000 feet. Stability and control tests will be performed at high angles of attack until the airplane attains level flight at 90,000 feet.

Temperatures of 700 degrees F. are predicted for the mission. This is roughly what has been experienced during the past two flights. The aircraft is designed to withstand 1,200 degree F. heating.

On this flight, except for the landing, the pilot will utilize a side control stick, located on the right side of the cockpit. It is designed for periods of high acceleration and high G forces. This control, integrated with the conventional center stick, has been used previously by X-15 pilots.

The ballistic control system or reaction controls will not be used during the flight except for an operational check. The system is designed to control the X-15 in thinner atmospheric regions.

During the B-52/X-15 flight and the X-15 portion of the mission, on-board recording equipment --developed specially for research aircraft by NASA--and telemetry will record vital information pertinent to the X-15 research project, with particular emphasis on hypersonic aerodynamics, stability and control, heating and performance data, and physiological and psychological information.

Much of this information is recorded on-board the X-15 during flight, while other data are relayed via telemetry. Following the flight, these data are analyzed to evaluate performance and help plan future missions.

-END-

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
400 MARYLAND AVENUE, SW, WASHINGTON 25, D.C.
TELEPHONES: WORTH 2-4155 — WORTH 3-1110

FOR RELEASE: P.M.'S Friday
April 13, 1962

RELEASE NO. 62-92

BRIEF HISTORY OF THE X-15 PROJECT

In the spring of 1952, the National Advisory Committee for Aeronautics, predecessor of NASA, recognizing the need for research leading to manned space flight, directed its laboratories to initiate studies of the problems that might be encountered. Under consideration were wind tunnel and other laboratory techniques, use of rocket boosters and manned aircraft.

Some two years later the NACA stepped up its efforts, studying more specific areas such as high-temperature stuctures, hypersonic aerodynamics, stability and control and piloting problems. At that time, it was decided that the program should be expedited and a period of about three years would be allowed for the design and construction. This virtually precluded the development of new materials and construction techniques.

Based on earlier surveys, the NACA recommended a manned aircraft capable of a speed of 6,600 feet per second (about six times the speed of sound at altitude) and an altitude of 250,000 feet. It was assumed the airplane would be air-launched similar to the existing research planes X-1, D-558-II and X-2. This decision limited the vehicle to about 50 ft. length and maximum gross weight of 30,000 pounds. At that time, the only available aircraft capable of air-launching such weight and size was the B-36.

On July 9, 1954, a joint NACA-USAF-Navy committee met in Washington, to consider the need for such a research vehicle and to discuss other hypersonic airplane concepts proposed by the Air Force and the Navy. The NACA proposal was accepted for further study and NACA was asked to take the initiative in obtaining approval from the Department of Defense.

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The first obstacle in the new project was the problem of obtaining a suitable rocket engine. No existing engine possessed the reliability and controllability required for a manned aircraft. The committee decided to postpone selection of a propulsion system until the requirements could be more clearly defined.

Later in 1954, the National Research Airplane Committee agreed on methods of originating and coordinating design requirements for eventual contract competition. A formal memorandum of understanding signed by the NACA, Air Force and Navy completed initial organization of the X-15 project. This memorandum assigned technical direction to the NACA, with the advice and assistance of the Research Airplane Committee, comprised of representatives of all three agencies. The Navy and Air Force agreed to finance the program with the Air Force administering the design and construction phases. Upon acceptance of the aircraft from industry, it would be turned over to NACA for research.

On December 30, 1954, the Air Force forwarded invitation-to-bid letters to 12 prospective contractors. The contractors were briefed on the project requirements on January 18, 1955.

Lack of a suitable engine for the project was still of real concern. Therefore, on February 4 four prospective engine contractors, Reaction Motors, General Electric, North American and Aerojet, were asked to submit engine proposals as early as possible.

After lengthy studies of proposals by the 12 airframe competitors, the Research Airplane Committee selected the bid of North American Aviation. A letter contract was awarded on November 18, 1955 and the contract negotiations were completed the following year.

In September 1956, a contract for the rocket engine was awarded to Reaction Motors, Inc., now a division of Thiokol Chemical Corp., which agreed to deliver an engine capable of 57,000 pounds of thrust, in-flight thrust variation from 30 to 100 per cent, and an operating duration of 90 seconds at full thrust.

By July 1956 the X-15 configuration was formalized. In the fall of that year, the project's first industry-wide conference was held at the NACA Langley Aeronautical Laboratory, Langley Field, Va. Technical papers were presented by engineers and scientists of NACA, North American and Reaction Motors. The conference was primarily concerned with design and construction problems and areas to be investigated once the flight program got underway.

During this period, it was determined the X-15 would be equipped with a side-located aerodynamic controller, designed for use during periods of high acceleration. In another action, it was decided to provide a series of ground tracking stations to assist the pilot with information and guidance. This complex of stations, later known as the X-15 High Range, stretches from Wendover, Utah, to Edwards Air Force Base, Cal., comprising radar stations at Ely and Beatty, Nev., and a master station at Edwards. The range was designed to aid in locating the aircraft and pilot in the event of an emergency.

Other systems considered at this time included an inertial guidance system to provide data of velocity, altitude, and pitch, roll and yaw; an escape system for the pilot -- later successfully tested to speeds of Mach 4 and altitude of 120,000 feet -- and a cockpit pressurization system, supplied by gaseous nitrogen and capable of pressurizing the X-15 cabin at the 35,000-foot level.

Development of the single-chamber, liquid propellant engine continued the main concern, primarily because of the research and development required for use in a manned system. In January 1958, the project management decided to continue the development of the 57,000-pound thrust engine but to use a small engine as the power plant for initial X-15 flights. The small engine, the XLR-11, develops 8000 pounds thrust. These engines, giving a total of 16,000 pounds in pairs, powered the X-15 during its first year of flight tests to a maximum speed of 2275 mph and altitude of 136,500 feet.

While work was proceeding on the X-15 airframe and its rocket engine, several NACA, Air Force and North American research pilots completed a program in the human centrifuge at the Naval Air Development Center, Johnsville, Pa. Participants in the dynamic simulation program included Capt. Iven Kincheloe and Capt. Robert M. White, USAF; Joseph A. Walker, Neil Armstrong and John B. McKay, NACA; and A. Scott Crossfield and Alvin S. White of

North American Aviation. This program was devised to assess the pilot's ability to make emergency reentry into earth atmosphere following control damper failures and to determine pilot limitations in accomplishing safe recovery from extremely high altitudes. The studies revealed no difficulties in either case.

The second X-15 technical conference was held in the summer of 1958 in Los Angeles, Calif. Several technical papers were presented describing the developmental status of the X-15 and other subjects such as stability and control, simulator testing, pilot considerations, mission instrumentation, etc.

The first X-15 was completed by the contractor on October 15, 1958. The aircraft was transported the following day to Edwards and here preparations were begun for the first captive flight. A series of captive missions to check out systems was completed during March, April and May. On June 8, 1959, Crossfield made the first glide flight for the contractor demonstration trials. This initial powerless flight lasted about five minutes. Most of the aircraft's systems performed satisfactorily.

Meanwhile, X-15 No. 2 was undergoing ground runs at Edwards in May and June. During July and August, several attempts at powered flight were cancelled because of leaks in the auxiliary power units and malfunctions caused by propellant-tank pressure regulators.

On September 17, 1959, Scott Crossfield successfully completed the first powered flight in the X-15-2. He attained a speed of Mach 2.1 (1350 mph) and an altitude of 52,341 feet.

The third flight in the contractor's demonstration program occurred on November 5, 1959, Following launch from the B-52 carrier plane at 44,000 feet, an explosion in the X-15 engine during the starting sequence blew off the last few inches of one of the rocket chambers. After shutting down the engine, the pilot jettisoned his remaining fuel and headed for a landing on Rosamond Lake, west of Rogers Lake at Edwards main base. The front landing gear failed at touchdown, causing the X-15 virtually to break in two just aft of the instrument bay. The fuselage skidded about 1,500 feet, causing extensive damage to the aircraft, which was returned to North American Aviation for repairs.

Early in 1960, after additional contractor flights in X-15 No. 1, this airplane was delivered to the Air Force and turned over to NASA to begin its research flight program. The first Government flight was completed on March 25, 1960, with Walker as pilot.

X-15 No. 3 was now at Edwards being subjected to a series of ground systems checks. On June 8, 1960, during its first ground engine run, this aircraft was blown apart on the test stand when a fuel pressure valve failed to operate, over-pressurizing the tank and causing an explosive rupture. The airplane was rebuilt by the contractor and returned to the project in the fall of 1961. In the process, an adaptive flight control system was installed to replace the standard stability-augmentation system. NASA's Neil Armstrong flew this ariplane on its maiden flight December 20, 1961. All systems functioned satisfactorily.

Since the Government initiated the research program with the large (XLR-99) engine on May 7, 1961, a series of flights gradually explored the research vehicle's performance capabilities. In orderly steps, flight speeds were increased gradually until Maj. White flew at maximum throttle to burnout and attained a speed of 4093 mph on November 9, 1961. White thus essentially completed the X-15 maximum speed effort. During this flight, and in a prior mission in the same aircraft, windshields failed. Extensive modifications have since been completed to eliminate this problem.

Other research missions during 1961 with the 57,000-pound thrust engine were designed to provide aerodynamic heating information and to study control problems in the event of damper failures. By the end of 1961, project officials estimated about 50 percent of the X-15 research objectives were achieved. The remaining data to be attained essentially involved high-altitude flight and missions at higher angles of attack to assess reentry problems.

In January 1962, while attempting his last flight in the project, the Navy X-15 pilot, Cdr. Forrest S. Petersen, safely completed an emergency landing in the X-15 at Mud Lake, Nev., about 200 miles northeast of Edwards AFB. After two unsuccessful attempts to start the engine, Cdr. Petersen jettisoned his fuel and landed the X-15 without incident, the first such remote landing since the project began. The engine failure was caused by a faulty pressure switch.

Of the six pilots originally assigned to the X-15 project, four remain: Walker, Armstrong and McKay, of NASA, and White, Air Force. White assumed the role as Air Force primary pilot when Capt. Iven C. Kincheloe, Jr. was killed in the crash of an F-104 in 1958. Maj. Robert M. Rushworth, USAF, became White's alternate. Cdr. Petersen, designated by the Navy to X-15 duty, was reassigned to command a fighter squadron last March.

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During the first three months of 1962 the flight program was delayed because of unusually heavy rain and snow on the Base at Edwards. Project officials took this opportunity to make a number of engineering changes and modifications to the three X-15 airplanes.

Of primary concern was the potential hazard in the lack of the stability-augmentation in the event the system failed during reentry from high altitude. An auxiliary system has since been installed in X-15 Nos. 1 and 2. It is an independent unit which can be energized manually or automatically by the pilot in the event of a SAS failure.

The problem of pressurization failures during a number of flights in 1962 was eliminated by the installation of a pressure-sensing unit to supplement the standard temperature-sensing control. No pressurization failures have been experienced since this change.

- END -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

RELEASE NO. 62-95

April 13, 1962

X-15 FLIGHT LOG

DATE	FLIGHT NO.*	PILOT	MACH NO.	MAX. ALT. (FT. MSL)	REMARKS
6-8-59	1-1-5	Crossfield	.79	37,550	planned glide flight
9-17-59	2-1-3	Crossfield	2.11	52,341	first powered flight
10-17-59	2-2-6	Crossfield	2.15	61,781	
11-5-59	2-3-9	Crossfield	1.00	45,462	engine fire; fuselage structural failure on landing
1-23-60	1-2-7	Crossfield	2.53	66,844	
2-11-60	2-4-11	Crossfield	2.22	88.116	
2-17-60	2-5-12	Crossfield	1.57	42,640	
3-17-60	2-6-13	Crossfield	2.15	52,640	
3-25-60	1-3-8	Walker	2.00	48,630	first govt. flight
3-29-60	2-7-15	Crossfield	1.96	49,982	
3-31-60	2-8-16	Crossfield	2.03	51,356	
4-13-60	1-4-9	White	1.94	48,000	
4-19-60	1-5-10	Walker	2.56	59,496	
5-6-60	1-6-11	White	2.20	60,938	
5-12-60	1-7-12	Walker	3.19	77,882	
5-19-60	1-8-13	White	2.31	108,997	
5-26-60	2-9-18	Crossfield	2.20	51,282	
8-4-60	1-9-17	Walker	3.31	78,112	2196 mph
8-12-60	1-10-19	White	2.52	136,500	
8-19-60	1-11-21	Walker	3.13	75,982	1986 mph
9-10-60	1-12-23	White	3.23	79,864	2182 mph
9-23-60	1-13-25	Petersen	1.68	53,043	
10-20-60	1-14-27	Petersen	1.94	53,800	
10-28-60	1-15-28	McKay	2.02	50,700	
11-4-60	1-16-29	Rushworth	1.95	48,900	
11-15-60	2-10-21	Crossfield	2.97	81,200	first flight with XLR-99 design engine
11-17-60	1-17-30	Rushworth	1.90	54,750	
11-22-60	2-11-22	Crossfield	2.51	61,900	first restart with XLR-99 design engine
11-30-60	1-18-31	Armstrong	1.75	48,840	
12-6-60	2-12-23	Crossfield	2.85	53,374	
12-9-60	1-19-32	Armstrong	1.80	50,095	first hot nose flight
2-1-61	1-20-35	McKay	1.88	49,780	

(over)

2-7-61	1-21-36	White	3.50	78,150	2275 mph - last LR-11 flight
3-7-61	2-13-26	White	4.43	77,450	2905 mph - first govt. XLR-99 flight
3-30-61	2-14-28	Walker	3.95	169,600	2760 mph
4-21-61	2-15-29	White	4.62	105,000	3074 mph
5-25-61	2-16-31	Walker	4.90	107,500	3300 mph
6-23-61	2-17-33	White	5.27	107,700	3603 mph
8-10-61	1-22-37	Petersen	4.11	78,200	2735 mph
9-12-61	2-18-34	Walker	5.25	114,300	3614 mph
9-28-61	2-19-35	Petersen	5.30	100,800	3600 mph
10-4-61	1-23-39	Rushworth	4.30	78,000	2830 mph - flight made with lower ventral off
10-11-61	2-20-36	White	5.21	217,000	3647 mph - outer panel of left windshield cracked
10-17-61	1-24-40	Walker	5.74	108,600	3900 mph
11-9-61	2-21-37	White	6.04	101,600	4093 mph - outer panel of right windshield cracked
12-20-61	3-1-2	Armstrong	3.76	81,000	2502 mph - first flight for X-15 No. 3
1-10-62	1-25-44	Petersen	.97	44,750	645 mph - emergency landing on Mud Lake after engine failed to light
1-17-62	3-2-3	Armstrong	5.51	133,500	3765 mph
4-5-62	3-3-7	Armstrong	4.06	179,000	2830 mph

BOX SCORE

AIRCRAFT	B-52/X-15 FLIGHTS	X-15 LAUNCHES
1	44	25
2	37	21
3	7	3
TOTALS	88	49**

PROJECT OFFICIALS ESTIMATE MISSION PRIMARY OBJECTIVES WERE ATTAINED ON 46 OF 49 X-15 FLIGHTS.

*Flight activity code:
first number - X-15 airplane number
second number - flight number for specified airplane
third number - X-15/B-52 airborne mission number

** Includes 2 glide flights without power

X-15 PILOTS

A. Scott Crossfield, North American Aviation, Inc.

Joseph A. Walker, Research Pilot, NASA Flight Research Center

Major Robert M. White, U.S. Air Force

Commander Forrest S. Petersen, U.S. Navy

John B. McKay, Research Pilot, NASA Flight Research Center

Captain Robert A. Rushworth, U.S. Air Force

Neil A. Armstrong, Research Pilot, NASA Flight Research Center

- END -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Washington 25, D. C.

Release No. 62-96 April 13, 1962

SUMMARY OF ROCKET AIRPLANE FLIGHTS

Airplane	Type of Flight				
	Glide	Jet	Rocket	Jet-Rocket Combination	Total
X-1-1	11		49		60
X-1-2	3		65		68
X-1-3	1				1
X-1A	3		28		31
X-1B	3		23		26
X-1D	1				1
X-1E			26		26
X-2-1	5		13		18
X-2-2	2				2
X-15-1	1		24		25
X-15-2			21		21
X-15-3			3		3
D-558-II #143		101	1	19	121
D-558-II #144		23	81		104
D-558-II #145	1	34	4	49	88
TOTAL	31	158	338	68	595

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Flight Research Center, PO Box 273, Edwards, Calif.
Telephone: CLifford 8-2111, ext. 2-2961

NASA NEWS RELEASE 16-62 FOR IMMEDIATE RELEASE
October 29, 1962

Three hundred six years of Federal Government Service were officially recognized today as honorary service emblems were awarded to 49 National Aeronautics and Space Administration employees. Mr. Paul F. Bikle, Director of the NASA Flight Research Center at Edwards presented the awards to seven recipients, who each had 20 years of government service. Other NASA officials presented emblems for 15, 10 and 1 years of service to the other recipients.

The seven 20-year awards were made to Messrs. Donald Bellman, Jack Fischel, Stanley Markey, Russell Mills, Ralph Pernula, Joseph Walker, and Joseph Weil, all residents of Lancaster, California. Five other NASA Flight Research Center employees received 15-year awards and six employees received 10-year awards. Thirty-one personnel were the recipients of the 1-year emblem.

The emblem is a circular replica of the NASA insignia. The type of emblem is based on the amount of service for which the award is made. Each of today's recipients of the 20-year award received a gold emblem with a ruby attached.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Flight Research Center, PO Box 273, Edwards, Calif.
Telephone: CLifford 8-2111, ext. 2-2961

NASA NEWS RELEASE 21-62 FOR IMMEDIATE RELEASE
November 26, 1962

The results of the investigation of the causes of the accident to the X-15, No. 2, reveal that the probable cause was a succession of two equipment failures coupled with a landing gear collapse, officials of the National Aeronautics and Space Administration's Flight Research Center have reported. The accident at Mud Lake, Nevada on November 9, 1962, is under continuing investigation by NASA and USAF engineers.

The inability of the rocket engine to attain full power was caused by a faulty governor actuator. This governor failed and did not allow the engine to receive a sufficient amount of propellant, resulting in the engine remaining at a low power setting. This governor actuator functioned properly in the pre-flight check-out.

The alternate plan for events of this nature is to land the aircraft at the pre-selected launch lake bed instead of proceeding to Edwards A.F.B. During the final portion of the landing approach to this lake bed, NASA pilot Jack McKay operated the controls to lower the landing flaps. However a failure in the mechanical lowering mechanism did not allow the flaps to come down and resulted in a high load on the aircraft's landing gear. The flaps were checked prior to launch and found to be operating.

Due to the unusually high landing load, the main landing gear collapsed soon after the X-15 touched down on the lake bed. After the gear collapsed, the X-15 skidded to the left for several thousand feet and rolled over completely on its back.

Present plans call for a mechanical improvement to be made in the flap lowering mechanism prior to another flight of an X-15 aircraft.

Although Research Pilot McKay was considerably bruised, his injuries were minor and he was released from the hospital four days after the accident.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Flight Research Center, PO Box 273, Edwards, Calif.
Telephone: CLifford 8-2111, ext. 2-2961

MEMORANDUM to Editors November 28, 1962

John (Jack) B. McKay, X-15 pilot for the National Aeronautics and Space Administration's Flight Research Center, will address the Bay Area Aviation Committee on Thursday, November 29, at the St. Francis Hotel in San Francisco.

The X-15 has made 74 flights in its research program. While conducting this aerodynamic flight research program, the aircraft has flown 4,104 mph and at 314,750 feet of altitude.

Mr. McKay has flown the rocket aircraft at speeds of 3,716 mph (over 5 times the speed of sound) and at an altitude of 129,000 feet. His last flight on November 9, 1962 resulted in a emergency landing at Mud Lake, Nevada.

Attached is material on Mr. McKay, the X-15 accident, and future plans for the X-15. Please feel free to use it as you see fit.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Flight Research Center, PO Box 273, Edwards, Calif.
Telephone: CLifford 8-2111, ext. 2-2961

NASA NEWS RELEASE 23-62 FOR IMMEDIATE RELEASE
December 11, 1962

X-15 No. 1 has been returned to the National Aeronautics and Space Administration's Flight Research Center from the North American Aviation Company in Los Angeles. During the four month period that the aircraft was at the Los Angeles Division of North American Aviation, modifications were completed that will enable the rocket powered aircraft to act as a platform to carry new equipment for future research flights.

These modifications are the first to be performed on any of the trio of X-15's in preparation for the "Follow-On" program, a two year series of flights in which the X-15 will be used as a test bed for future scientific research projects. These projects will be sponsored by NASA and the United States Air Force.

New modifications to the X-15 No. 1 include a window installed in the under side of the aircraft's fuselage and a camera mounted on the inside of the aircraft's structure. This project will be used to study the optical degradation resulting from observations through hypersonic boundary layers and shock waves.

Scheduled for the first flights in late January or February of 1963, the proposed flights will be made at different altitudes and speeds. These flights will be the first official specific flights in the Follow-On program. This program will probably add 35 flights to the schedule originally set for X-15 research objectives.

X-15 No. 1 has already made 32 flights in the basic X-15 program of aerodynamic research. During this program it was flown to an altitude of 246,700 feet on April 30, 1962 by Joseph A. Walker, NASA Chief Research Pilot and on June 29, 1962 to a speed of 4,104 mph by the same pilot.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

December ~~11~~ 14, 1962

FLIGHT:	~~11~~ 12 (Number 3X-15)
PILOT:	Major Robert M. White, USAF
NASA 1:	Jack McKay, NASA
B-52 PILOT:	Major Fitzhugh Fulton, USAF
LAUNCH PANEL:	Stanley Butchart, NASA
CHASE PILOTS:	T-38, Major Russell Rogers, USAF
	F-104, ~~Joseph Walker~~ Jim Rogers, NASA
	F-104, Capt. William Knight, USAF
	F-104, Major ~~Henry Gordon~~ Mervin Evenson, USAF
LAUNCH AREA:	Mud Lake, Nevada
B-52 TAKE OFF:	0900 (PST), December 11, 1962
X-15 LAUNCH:	1000 (PST), December 11, 1962

The 75th flight in the joint NASA-USAF-USN X-15 research program is scheduled for today, December 11, 1962. This flight, another evaluation of aircraft stability with the lower ventral removed, will be piloted by Major Robert M. White, USAF, his 16th flight in the program.

This flight differs from the previous ventral-off flights in that the dampers (devices that diminish undesirable aircraft oscillations) will not be turned off. In all of the previous ventral-off flights, one or more of the dampers has been turned off intentionally by the pilot to study the effects.. With all of the damper systems in operation, NASA engineers have planned for Major White to pilot the X-15 to an angle of attack of 25 degrees, the highest yet flown with the lower ventral removed.

The angle of attack is a critical factor in the X-15's reentry from extreme altitude. The previous high angle of attack with the ventral removed was 18 degrees; the highest with the ventral on was 25 degrees.

The rocket engine that will be used on this flight was given a static ground test run on December 4th with Major White at the controls. As this engine cannot be throttled back below 50%, it possesses a different fuel control system as opposed to the fuel control unit in the Number 2 X-15.

A dry lubricant has been added to the unit that connects the flap positioning motor with the flap lowering mechanism on the X-15. This has resulted in a 50% increase of actual power that is applied to the landing flap mechanism.

The flight will be made in the Number 3 X-15 which is equipped with the adaptive control system that was made by the Minneapolis-Honeywell Regulator Co. The Thiokol Chemical Corperation developed rocket engine is scheduled to be shut down at 79 seconds, propelling the North American Aviation built aircraft to an approximate speed of 3700 mph and altitude of 153,000 feet. The 195 mile trip from Mud Lake, Nevada should take 10 minutes.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Flight Research Center, PO Box 273, Edwards, Calif.
Telephone: CLifford 8-2111, ext. 2-2961

NASA NEWS RELEASE 24-62 FOR IMMEDIATE RELEASE
December 19, 1962

The National Aeronautics and Space Administration's Flight Research Center has announced that it has received an A-5A (A3J) jet aircraft from the United States Navy for use in support of its studies of the projected supersonic transport. The jet aircraft, called the Vigilante, was delivered from the Columbus, Ohio division of North American Aviation, builder of the aircraft, where minor aircraft modifications were made.

As the A-5A is capable of sustained supersonic flight, the primary use of this aircraft will be to study the problems that may be encountered in the terminal area of air traffic control operations with transport aircraft of supersonic speeds.

Working in close cooperation with officials of the Federal Aviation Agency, engineers of the Flight Research Center will plan and conduct supersonic flights with the aircraft on assigned federal airways and into high air traffic density areas, such as Los Angeles. The results of the air traffic control of these flights, and the flights themselves, are expected to provide the basis for the formulation of future control plans that will be necessary for the safe operation of commercial supersonic jets.

The 76 foot long aircraft will be instrumented with the standard handling qualities instrumentation that is used on most research aircraft. Among these instruments will be devices for measuring and recording angle of attack, side-slip, degree of control movement, and roll rates. Specialized instruments that will later be mounted on the B-70 for measurement of skin friction will be pre-tested on this aircraft.

The use of these added instruments will also allow Flight Research Center engineers to evaluate the low speed characteristics of the A-5A in different landing approaches as they would apply to a supersonic transport.

William H. Dana, Research Pilot for the NASA Flight Research Center, has been assigned as project pilot for the program. Donald Hughes, Aerospace Engineer, is the project engineer.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

December 20, 1962

FLIGHT:	13 (Number 3 X-15)
PILOT:	Joseph A. Walker, NASA
NASA 1:	John B. McKay, NASA
B-52 PILOT:	Major Russell Bement, USAF
LAUNCH PANEL:	Stanley Butchart, NASA
CHASE PILOTS:	T-38, Major Robert Rushworth, USAF
	F-104, Milt Thompson, NASA
	F-104, Capt. William Knight, USAF
	F-104, Major Henry Gordon, USAF
LAUNCH AREA:	Mud Lake, Nevada
B-52 TAKE OFF:	0930 (PST), 20 December 1962
X-15 LAUNCH:	1030 (PST), 20 December 1962

The 76th flight of the X-15 is scheduled for 9:30 a.m., PST, December 20, 1962. This flight, another investigation of aircraft stability with the lower portion of ventral tail removed, will be piloted by Joseph A. Walker, Chief Research Pilot for the National Aeronautics and Space Administration's Flight Research Center.

The flight plan for this flight calls for pilot Walker to attain an altitude of approximately 173,000 feet. This is not considered a relatively high altitude for the research aircraft but is still high enough that an actual reentry will be made through the atmosphere. As it is the first reentry to be made with ventral removed, it will be a mild maneuver from this altitude.

The rocket engine is slated to burn for 80 seconds before it will be shut down by the pilot. An approximate maximum speed of 3700 mph is expected. The 185 mile flight should last 10 minutes.

This will be the 17th X-15 flight for Joseph Walker; he last flew the X-15 on August 14th of this year.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Flight Research Center, PO Box 273, Edwards, Calif.
Telephone: CLifford 8-2111, ext. 2-2961

FOR RELEASE:

NASA NEWS RELEASE 1-63 FOR IMMEDIATE RELEASE
January 18, 1963

The National Aeronautics and Space Administration announced that a contract with an estimated cost of $3,610,632 has been awarded to Bell Aerosystems Company, a division of Bell Aero-Space Corporation, Buffalo, New York, to design and construct two manned lunar landing research vehicles to be used in conjunction with NASA's Project Apollo.

The contract was awarded by NASA's Flight Research Center, Edwards, California. The program is to be conducted at NASA's Flight Research Center and is in direct support of Project Apollo which is under the general direction of NASA's Manned Spacecraft Center, Houston, Texas.

The first research vehicle is to be delivered in 14 months and the second within 16 months.

The free-flight test devices will be capable of taking off and landing under their own power, attaining an altitude of about 4,000 feet, hovering, and horizontal flight.

The program is planned to investigate extensively the problems that may be encountered in landing a manned vehicle on the moon's surface. The proposed vehicles will permit studies of piloting and operational problems involved in the final phase of a lunar landing and the initial phase of a lunar take-off. Areas of interest include controls, pilot displays, visability, orientation, systems, control of propulsion and dynamics of flight and landing.

The results of these studies will assist in the preparation of flight crew training devices.

The research vehicles will be capable of carrying one man and about 200 pounds of research equipment. However, it also will be possible to convert the vehicle for a two-man crew. Ejection seats will be provided for the pilots.

The lunar landing test vehicles will be powered by two separate propulsion systems. A jet engine will be utilized for take-off and to compensate for the gravitational force of the earth. By gimbaling the engine it will remain in a vertical position, regardless of the vehicle's attitude, directing its thrust upward which, during a simulation maneuver, will equal five-sixths of

the earth's gravity, thus simulating the lunar gravity.

Rocket engines will be used to perform horizontal maneuvers and to decelerate the vehicle as it approaches the ground.

An attitude control system, using small rocket motors and similar to that used in the X-15 research aircraft, will be incorporated in the vehicles.

The vehicles will stand about 20 feet high and will be supported by four legs, equipped with shock absorbing feet.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Flight Research Center, PO Box 273, Edwards, Calif.
Telephone: CLifford 8-2111, ext. 2-2961

FOR RELEASE:

NASA NEWS RELEASE 2-63
January 25, 1963

FOR RESEASE: January 31, 1963
11:00 a. m.

The National Aeronautics and Space Administration's Flight Research Center at Edwards, California announced that it has awarded a $1,325,000 contract to the Lockheed-Georgia Company of Marietta, Georgia for the purchase of a Lockheed-Jet Star aircraft.

The aircraft, to be used for research purposes only, will be modified to include a variable stability control system that will permit the aircraft to fly as a variety of future advanced aircraft. Designated the General Purpose Airborne Simulator (GPAS), it will be used in many of the research projects that will be carried out by the Flight Research Center to investigate such areas as aircraft flying qualities, automatic and manual control systems, pilot instrument displays and pilot training.

Special emphasis will be placed on the simulation of those characteristics expected to be found on a supersonic transport.

An airborne simulator is used in flight research primarily to present the pilot with the most realistic environment and total sensory cues possible, since the pilot may not always be aware of all of the many factors he uses in controlling an airplane. The new simulator will have the flexibility to vary these factors as the project demands.

Delivery of the aircraft is expected in March and simulator components will be added later in the year.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Flight Research Center, PO Box 273, Edwards, Calif.
Telephone: CLifford 8-2111, ext. 2-2961

FOR RELEASE:

NASA NEWS RELEASE 3-63
February 1, 1963

FOR RELEASE: February 2, 1963
12:00 p.m.

The National Aeronautics and Space Administration's Flight Research Center at Edwards, California announced that it has awarded a $128,675.00 contract to Comcor Inc. of Denver, Colorado. This contract calls for Comcor to provide the service and maintenance of the flight simulators that are used to provide ground simulation for one of America's most valuable research projects, the X-15 aircraft.

This computer system has the capability to provide the actual aircraft performance and stability conditions that may be expected in flight. Such vital information as speed, altitude and the energy that may be expected under certain flight conditions can be simulated prior to flight with this system. As such, the computer system plays an important role during the flight planning phase for actual flight.

Many hours of pilot preparation are spent in an exact replica of the cockpit of the rocket powered aircraft prior to flight, which in combination with the analog computer system, allows the pilot to experience almost an exact duplication of the proposed flight.

To date, the three X-15 aircraft have made 77 flights in this joint NASA-USAF-USN program. As the aircraft are capable of flight at high speeds, and can leave and reenter the earth's atmosphere, valuable information concerning aerodynamic heating, stability and control, and the role of the pilot has been obtained.

During the course of the program, research flights have been made that have flown as high as 314,750 feet and at a speed of 4104 m.p.h.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Flight Research Center, PO Box 273, Edwards, Calif.
Telephone: CLifford 8-2111, ext. 2-2961

NASA NEWS RELEASE 4-63
February 6, 1963

FOR RELEASE: February 8, 1963
12 Noon

A $71,950 contract was awarded by the National Aeronautics and Space Administration's Flight Research Center at Edwards, California to the Aero Commander Company of Bethany, Oklahoma. The contract is a one year lease on an Aero Commander 680F aircraft. A loan aircraft will be supplied by the company for two months until the final model selected by NASA is delivered.

In addition to providing official transportation for the NASA Center, the aircraft will be used to support the X-15 research program.

On the proposed flight path of the X-15, dry lake beds are selected as possible landing sites should the aircraft not reach its terminal destination. These lake beds must be checked prior to every flight of the X-15 to ensure that they have not become unsuitable for use due to rain or other causes. If they are found to be unsuitable, the flight must be altered or rescheduled.

The Aero Commander will be used to transport NASA technicians to the lake beds to verify the ground conditions. The aircraft's ability to land at these sites coupled with its comparatively fast speed will provide faster, and more accurate lake bed reports.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

NASA NEWS RELEASE 5-63
February 21, 1963

FOR RELEASE: IMMEDIATELY

The National Aeronautics and Space Administration's Flight Research Center at Edwards, California acted as host to student flight engineers from California State College at San Luis Obispo on February 20. As part of an engineering course in flight testing, the prospective engineers were given an on-the-spot look at the activities connected with the flight planning for one of the most successful flight research programs ever conducted, the X-15.

The X-15 has already made 77 flights in its program of aerodynamic research. During these research flights, the rocket-powered aircraft has flown to 314,750 feet and at a speed of 4104 mph.

Starting with a briefing by Mr. Warren Wilson, head of the NASA X-15 planning office, the group was given an insight into the various requirements necessary to plan a flight for the research aircraft and how the flights are used to obtain the desired flight data. Mr. Wilson also explained the use of the X-15 simulator-analog computer system that is used in both planning the actual flight plan and as a trainer to assist the X-15 pilots in preparing for their flights.

Mr. Norman DeMar of NASA's operations engineering branch explained to the future engineers how the aircraft itself must be prepared for the flight. In addition to the normal maintenance that is required to ready the aircraft, Mr. DeMar discussed how the different objectives for the various flights would cause the use of additional instrumentation and equipment.

Mr. Wilson and Mr. DeMar, then accompanied the interested visitors on a personal tour of the NASA hangar where they inspected the actual aircraft.

MORE

During an informal portion of the field trip, the visitors turned the tables on their hosts and brought Wilson and DeMar, both alumni of California State College, up to date on the San Luis Obispo campus.

Reciprocating, the Flight Research Center will return the visit on February 28 when a NASA representative will visit the California State College campus at San Luis Obispo to explain the engineering opportunities that exist with NASA.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Flight Research Center, PO Box 273, Edwards, Calif.
Telephone: CLifford 8-2111, ext. 2-2961

March 8, 1963

MEMORANDUM to Editors

FOR IMMEDIATE RELEASE

Mr. Joseph A. Walker, chief X-15 project pilot for the National Aeronautics and Space Administration's Flight Research Center, will address leading members of the aircraft-aerospace industry at a luncheon meeting in Los Angeles on March 20.

The luncheon, which is being sponsored by the Society for Nondestructive Testing is part of their national convention, which runs the week of 18 - 22 March. The convention is being held in conjunction with the Western Metal Congress which is also being held during the same week.

The meeting, which is open to the press, will begin at 12:00 noon. It will be preceded by an open press conference at 11:30 behind the main speakers table.

To date the rocket-powered X-15 has made 77 flights in its highly successful research program. During the course of these flights, the aircraft has attained an altitude of 314,750 feet and a speed of 4104 mph. Mr. Walker has flown the research aircraft to 270,000 feet (51 miles) and to its fastest speed, 4104 mph.

We are enclosing some background material on the X-15 and Mr. Walker. Should you desire any further assistance pertaining to Mr. Walker or the X-15 program, please contact this office.

Ralph Jackson

Ralph B. Jackson
Public Information Officer

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

April 10, 1963

FLIGHT:	33 (Number 1 X-15)
PILOT:	Major Robert A. Rushworth, USAF
NASA 1:	Major Robert White, USAF
B-52 PILOT:	Major Russell Bement, USAF
LAUNCH PANEL:	Jack Russell, NASA
CHASE PILOTS:	T-38: Major Walter Daniel, USAF
	F-104: Jack McKay, NASA
	F-104: ~~Major Henry Gordon,~~ Albert Crews USAF
LAUNCH AREA:	Hidden Hills, California
B-52 TAKE OFF:	0900 (PST) 10 April 1963
X-15 LAUNCH:	1000 (PST) 10 April 1963

The 78th flight of the X-15 is scheduled today in the number one X-15. Major Robert A. Rushworth, USAF, will be the pilot in his 11th flight in the rocket powered aircraft. He last flew the X-15 on October 23, 1962.

One of the primary purposes of today's flight will be to check out a camera that has been installed on the front underside of the X-15. The pictures obtained from this camera will be evaluated to see how they are affected by the shock waves and boundary layer that are caused by the flight of the X-15.

This is planned to be a low and slow flight in comparison to most X-15 flights. Major Rushworth is programmed to attain a maximum altitude of 74,000 feet and an approximate speed of 2700 mph. The 125 mile flight from Hidden Hills, California should take about 10 minutes. This flight will also be made with the lower ventral removed.

In order to hold his speed down, NASA engineers have preplanned that Major Rushworth reduce his power setting on the rocket engine to 50% of the available power immediately after lighting the engine. This should cause the rocket engine to burn for 136 seconds. The previous longest engine burn time was 127 seconds on a flight made by John McKay, NASA, on September 28, 1962.

-30-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

Joseph A. Walker, NASA will fly the X-15 number 3 today in a research flight designed to investigate heating transfer rates and the flow over certain parts of the aircraft. The flight will be made at comparitively low altitudes and high airspeed.

Certain temperatures recorded on isolated parts of the X-15 have not conformed with earlier predicted values. This difference is probably due to unusual air flow over these surfaces.

Therefore on this flight 25 pressure measuring devices, tubed rakes that protude from the surface of the X-15 into the air stream, have been mounted on the X-15 to record information concerning this air flow.

An additional purpose of the flight will be an evaluation of heat transfer. Data obtained from this flight will be used by NASA engineers to determine how the heat, caused by the friction of the air against the X-15, is transmitted to the surfaces of the airplane. Over 400 heat sensing devices mounted on the X-15 and recording during the flight will be utilized. Normal X-15 temperatures in the 800° to 900° F. range are predicted.

Due to be launched from location just over the Nevada - California state line, near Hidden Hills, California, the 125 mile flight is scheduled to last about 10 minutes. Peak altitude will be approximately 75,000 feet and the velocity should be around 3500 m.p.h. The rocket engine is scheduled to burn for 86

MORE

seconds due to the fact that pilot Walker will reduce the throttle setting to 40% during the flight.

This will be the 79th flight for the X-15 and the 19th X-15 flight for Joseph A. Walker.

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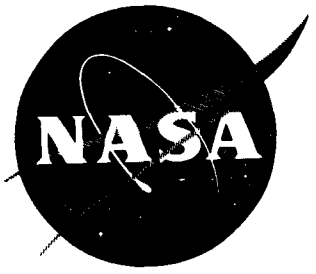
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	79th (15th for X-15 number 3)
PILOT:	Joseph A. Walker, NASA
NASA 1:	Jack McKay, NASA
B-52 TAKE OFF:	0900 17 April 1963
X-15 LAUNCH:	1000 17 April 1963
LAUNCH AREA:	Nevada, near Hidden Hills, California
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3500 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	73,000 - 75,000 feet
PROGRAMMED ENGINE BURN:	86 seconds
SUPPORT PERSONNEL:	
B-52 PILOT:	Major F. Fulton, USAF
LAUNCH PANEL:	Stanley Butchart, NASA
CHASE PILOTS:	F-104: William Dana, NASA F-104: Major Henry Rogers, USAF T-38: Major Sorlie, USAF T-38: Major Robert White, USAF
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corp.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

MC KAY TO MAKE 80TH FLIGHT IN X-15 SERIES

The number one X-15 is scheduled to fly today, April 24 with John B. McKay, NASA as its pilot. The purpose of today's flight is another evaluation of the optical degradation that is caused by the hypersonic boundary layer and shock waves of the X-15.

This will be the first X-15 flight for John McKay since his emergency landing at Mud Lake, Nevada on November 9, 1962. It was on this flight that the X-15 number 2 turned over on its back resulting in minor injuries to pilot McKay. He received his medical O. K. for X-15 flight from the Lovelac Clinic in Albuquerque, New Mexico.

The flight will be launched over Delamar Lake, Nevada and make the 215 mile trip in approximately 11 minutes. Intended flight maximums will be about 3400 m.p.h. and 98,000 feet in altitude.

-END-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	81 16 80 (34 for the X-15 number 1)
PILOT:	John B. McKay, NASA
NASA 1: Rush	Major Robert Rushworth, USAF
B-52 TAKE OFF:	0900 24 April 1963
X-15 LAUNCH:	1000 24 April 1963
LAUNCH AREA: Mud	~~Delamar,~~ Nevada
FLIGHT DISTANCE:	215 Miles
PROGRAMMED MAXIMUM SPEED:	3400 mph
PROGRAMMED MAXIMUM ALTITUDE:	98,000 feet
PROGRAMMED ENGINE BURN: 78	80 seconds
SUPPORT PERSONNEL: Sqdn. Leader Archer, RAF	
B-52 PILOT: Archer	Major Russel Bement, USAF
LAUNCH PANEL:	Jack Russel, NASA
CHASE PILOTS:	T-38: Major R. White, USAF
Dana	F-104: ~~Milton O. Thompson, NASA~~
	F-104: Major W. Daniel, USAF
	F-104: Capt. W. Knight, USAF
PRIME CONTRACTOR (AIR FRAME) T-38: Mfr. Lockheed	North American Aviation
PRIME CONTRACTOR (POWER PLANT)	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Flight Research Center, PO Box 273, Edwards, Calif.
Telephone: CLifford 8-2111, ext. 2-2961

FOR RELEASE:
5 May 1963

MEMORANDUM TO EDITORS:

X-15 SCIENTIST TO ADDRESS BANQUET

Dr. Eldon E. Kordes of the National Aeronautics and Space Administration's Flight Research Center at Edwards, California will be the featured banquet speaker at the Spring Meeting of the Society for Experimental Stress Analysis to be held in Seattle on May 9, 1963. The banquet and meetings will be held at the Benjamin Franklin Hotel.

Dr. Kordes, as head of vehicle and systems dynamics research for the NASA Flight Research Center will discuss some of the aspects gained from the flight test program of the rocket powered X-15. One of the most successful of research programs, the X-15 has already made over 75 flights.

We are enclosing some biographical data and pictures of Dr. Kordes for your use. We are also enclosing some background information on the X-15. Should you desire any further assistance pertaining to Dr. Kordes or the X-15, please contact this office.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805-Clifford 8-2111, Ext. 2-2961

FRC NEWS RELEASE 9-63

FOR RELEASE: IMMEDIATELY

NASA MEDALS TO BE AWARDED FOR X-15 RESCUE OPERATIONS

Six men who risked their lives during rescue operations following an X-15 accident that occurred on November 9, 1962 will be honored at ceremonies at the National Aeronautics and Space Administration's Flight Research Center on May 8, 1963.

The NASA Medal for Exceptional Bravery - the first time that this medal has ever been awarded - will be presented to the men by Dr. Robert C. Seamans, Jr., Associate Administrator for the National Aeronautics and Space Administration.

Captain Paul J. Balfe, USAF helicopter pilot, John A. Gordon, NASA rocket technican, Airman Third Class Larry J.

MORE

Hough, USAF physological training specialist, Curtis C. Lyon, an USAF civilian firefighter crew chief, Technical Sergeant Charles L. Manes, USAF helicopter crew chief, and Doctor (Captain) Lynn B. Rowe, USAF flight surgeon, will receive the award.

The six medal recipients were instrumental during the rescue operations that took place at Mud Lake, Nevada after an X-15 rocket-powered aircraft turned over during landing. The pilot, NASA research pilot John B. McKay, received only minor injuries in the accident.

Other officials besides Dr. Seamans who are slated to speak at the ceremonies include Paul F. Bikle, Director of the NASA Flight Research Center and Brigader General Irving L. Branch, USAF Flight Test Center Commander.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805-Clifford 8-2111, Ext. 2-2961

FRC NEWS RELEASE 10-63

FOR RELEASE: May 10, 1963
Friday, A.M.

NASA'S FLIGHT RESEARCH CENTER PURCHASES 3 SUPERSONIC JETS

Three F-104 jet aircraft were purchased by the National Aeronautics and Space Administration's Flight Research Center at Edwards, California. A contract for $2,256,000.00 was awarded to the Lockheed-California Company of Burbank, California for the planes that will be added to the Center's complement of research and operational aircraft.

The new F-104's will be modified for use as test beds for future projects that will be carried out at this NASA Center. Flight Research Center engineers will outfit the aircraft with various kinds of equipment and instrumentation that will produce actual flight time data for many

MORE

programs.

Another use of the supersonic F-104's will be the flight simulation they provide for the pilots of the rocket-powered X-15. By reducing the power of the F-104 and lowering the landing gear and flaps, X-15 pilots can closely simulate the landing characteristics of the X-15 research aircraft. Prior to every X-15 flight, the scheduled X-15 pilot makes a flight in a F-104 and flys a simulated X-15 landing pattern at the pre-planned dry lake beds on his proposed X-15 flight path.

Capable of flight at Mach 2 (twice the speed of sound), an F-104 was flown to a peak altitude of 103,395 in a special test in 1959.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805-CLifford 8-2111, Ext. 2-2961

FRC NEWS RELEASE 13-63

FOR RELEASE: Monday Morning
24 June 1963

NASA SELECTS LEAR SIEGLER FOR SPACE PILOT PHYSIOLOGICAL STUDIES

The National Aeronautics and Space Administration has selected Lear Siegler, Incorporated of Santa Monica, California, to conduct a research program designed to maintain future aero-space pilots and astronauts in their best physiological state while in flight. The NASA's Flight Research Center, which will provide technical management of the program will conduct negotiations this month. The total cost of the design study program is expected to exceed one million dollars.

The proposed system, called a psychophysical information

MORE

acquisition processing and control system (PIAPACS), will have the capability to sense and record the various physical functions of the pilot and his vehicle. NASA scientists, with the aid of computers, then expect to use this information to provide controls for maintaining the pilot and his environment in the best operational state.

First step in the 18 month program will be the development and construction of a unique sensor system mounted in the pilot's garment and headgear. This system, which will replace the present system of attaching sensors to the pilot by the use of tape and internal instruments, will permit acquisition of data on a continuous basis without discomfort or distraction to the pilot. This sensor system will be worn by NASA pilots on flights, both simulated and actual, in a variety of aircraft including the supersonic F-104 and the rocket-powered X-15. Data obtained from these flights will be recorded and processed for computer reduction. The data from the computer would be used to display immediate and continuously the physiological and physical condition of the pilot at all times in flight. It could also be used as a basis for predictions and, if necessary, to control or correct any abnormal trends or conditions.

The final portion of the program will result in the conceptual design of the ultimate operational system for use in advanced spacecraft.

Lear Siegler was selected from 11 other firms for the contract.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRA TION
FLIGHT RESEARCH CENTER
Edwards, California

JOE WALKER TO MAKE HIGH SPEED HEAT RATE FLIGHT IN X-15

Today's flight in the number 3 X-15 is scheduled to investigate heating rates in the X-15 at relatively high speeds and low angles of attack. This will be the 84th X-15 flight in the joint NASA-USAF-USN research program and it will be piloted by Joseph A. Walker, chief X-15 pilot for NASA.

Heating rates, measurements of how fast the structure of the X-15 heats, are dependent on the aircrafts velocity, the amount of exposure time, and the dynamic pressure. Therefore all of the heat rate flights are made at different combinations of these variables. Today's flight profile calls for the X-15 to maintain a relatively high speed, about 3800mph, for about 8 seconds. However the dynamic pressure, or as it is called by the engineers "q", will be relatively moderate and limit the maximum temperatures to between 1000 and 1100 degrees F., not extreme by X-15 standards.

MORE

A secondary purpose of the flight will be to perform several manuevers to investigate various control methods with the automatic damping system turned off.

The 215 mile trip from Mud Lake, Nevada should last about 9 minutes. The planned peak altitude is approximately 90,000 feet.

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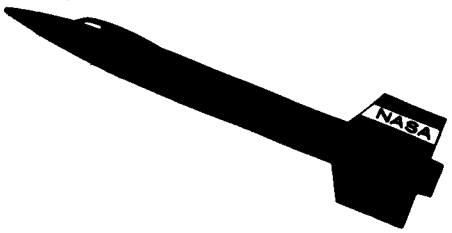


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	84 (18 for X-15 number 3)
PILOT:	Joseph A. Walker, NASA
NASA 1:	Major Robert Rushworth, USAF
B-52 TAKE-OFF	0900 28 May 1963
X-15 LAUNCH:	1000 28 May 1963
LAUNCH AREA:	Mud Lake, Nevada
FLIGHT DISTANCE:	215 miles
PROGRAMMED MAXIMUM SPEED:	3800 mph.
PROGRAMMED MAXIMUM ALTITUDE:	90,000 feet
PROGRAMMED ENGINE TIME:	86 seconds
SUPPORT PERSONNEL:	
B-52 PILOT	unassigned
LAUNCH PANEL	Stanley Butchart, NASA
CHASE PILOTS	T-38: Major Robert White, USAF F-104 William Dana, NASA F-104: Captain William Knight, USAF F-104: Captain Russel Rogers, USAF
PRIME CONTRACTOR (Air Frame)	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant)	Thiokol Chemical Corp.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805-CLifford 8-2111, Ext. 2-2961

FRC NEWS RELEASE
15-63

FOR RELEASE: Immediately

FRC

LOCAL SCIENTIST HONORED BY NASA FOR TFX INVENTION

Thomas A. Toll, chief research engineer for the National Aeronautics and Space Administration's Flight Research Center, was honored recently for his developmental work in connection with the TFX, the new proposed bi-service aircraft. Mr. Toll, who lives in Lancaster, California, was honored with two other men by Dr. Hugh L. Dryden, Deputy Administrator of the NASA in Washington ceremonies last week.

Mr. Toll, together with two other NASA engineers, William Alford and Edward Polhemus of NASA's Langley Research Center, shared honors for two separate inventions that together made possible the practical application of the variable sweep-wing configuration that is being used on the TFX. This ability to vary the wing

(MORE)

from a straight wing to an extreme swept-wing configuration will enable the TFX to land at slow speeds and still be able to accelerate to speeds exceeding twice the speed of sound.

(END)

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805-CLifford 8-2111, Ext. 2-2961

FRC NEWS RELEASE 16-63

FOR RELEASE: IMMEDIATELY

WALKER TO ADDRESS AIRCRAFT SYMPOSIUM

Joseph A. Walker, the man who has flown a winged vehicle faster and higher than any other man, will act as chairman of the flight test panel at the First Western Symposium on Progress in Private Aviation that will be presented in Pomona, California on August 16 and 17.

Other famous aviation personnel including FAA administrator Najeeb Halaby, Lockheed test pilot Tony LeVier, Gill Roff Wilson and Betty Miller will participate in the two day symposium.

Mr. Walker, chief pilot for the National Aeronautics and Space Administration Flight Research Center, has flown the X-15 to a speed of 4104 mph and to an altitude of 348,700 feet.

Enclosed is material on Mr. Walker for your use. Contact this office for any further assistance.

(END)

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
400 MARYLAND AVENUE, SW, WASHINGTON 25, D.C.
TELEPHONES: WORTH 2-4155 — WORTH 3-6925

FOR RELEASE: MONDAY AM's
June 10, 1963

RELEASE NO: 63-127

X FRC

TWO NEW PILOTS ASSIGNED TO X-15

NASA Flight Research Center, Edwards, Calif.--Captain Joe H. Engle, USAF, and Milton O. Thompson, NASA, will make their first flights in the X-15 later this year. Selection of the two new pilots was announced today by Paul F. Bikle, Director of the NASA Flight Research Center, and Brig. General Irving L. Branch, Commander of the Air Force Flight Test Center, Edwards AFB.

-more-

The pair will join three other pilots in the flight efforts of this joint NASA-USAF-USN research program that is obtaining scientific information at extremely high speed and altitude in manned aircraft. The others are John B. McKay, NASA; Major Robert A. Rushworth, USAF; and Joseph A. Walker, NASA Chief Research Pilot.

The new pilots will fill vacancies left by NASA research pilot Neil Armstrong who was selected as an astronaut for NASA's Manned Space Flight Program and Air Force Major Robert White who recently was reassigned to other Air Force duties.

Captain Engle, 30, of Champan, Kansas, was a test pilot in fighter aircraft at Edwards prior to entering the USAF Aerospace Research Pilots School, which trains project officers for manned space programs. He was graduated from this school on May 31 and was reassigned to the Spacecraft Operations Branch of the Air Force Flight Test Center, where he will remain while attached to the X-15 program.

-more-

Milton O. Thompson, 37, civilian research pilot for NASA since 1956, has also been named as a pilot for the USAF X-20 Dyna-Soar. He has been project pilot on a number of other flight programs at the Flight Research Center, including a flexible-wing paraglider and NASA's M-2, a wingless flight vehicle which will undergo evaluations of flight characteristics and low speed landing operations.

Both fliers, who have been chase pilots on previous X-15 flight operations, will undergo an extensive training program in preparation for their own flight careers in the rocket-powered airplane. This program will include flying in several high-performance jets, some with variable stability equipment that are capable of closely simulating the flight characteristics of the X-15 itself. They will also be used as part of the X-15 ground support team and as primary chase pilots. Their duties will include ground engine runs and control and communications work as "NASA 1", the X-15 flight controller.

Engle and Thompson will become the eighth and ninth pilots to fly the X-15, which holds world records for altitude and speed in manned winged aircraft. In addition to Walker, White, McKay, Rushworth and Armstrong, Cdr. Forrest Petersen, USN, and Scott Crossfield of North American Aviation, Inc. also flew the aircraft.

-end-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

X-15 SCHEDULED FOR 42 MILE HIGH FLIGHT TODAY

The 85th flight in the joint NASA-USAF-USN X-15 research aircraft will be piloted today by Air Force Major Robert A. Rushworth, his 13th flight in the X-15.

This will be the highest flight yet for the 38 year old pilot, who is scheduled to reach approximately 220,000 feet on this flight. His previous high was 134,500 feet, reached on an X-15 flight flown on October 23, 1962. Today's flight will serve as a build-up for a later flight scheduled to reach 270,000 feet.

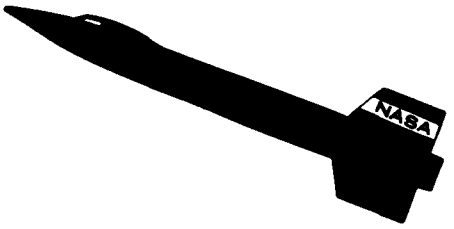
MORE

Re-entry to the earth's atmosphere on today's flight will be accomplished using 20 degrees of speed brakes and an angle of attack setting of about 20 degrees. Re-entry should be completed by 90,000 feet.

Upon completion of re-entry, Major Rushworth will intentionally "sideslip" or yaw the X-15 about 5 degrees off its normal flight path three separate times. These will be steady maneuvers, lasting about 40 seconds each, designed to measure air pressure and local air flow against the tail surfaces of the aircraft.

Launched from Delamar Lake, Nevada, Major Rushworth will shut the rocket engine off after 78 seconds, propelling the X-15 to a maximum speed of about 3600 mph. The 240 mile flight should last 10 minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	85 (19 for X-15 number 3)
PILOT:	Major Robert A. Rushworth, USAF
NASA 1:	Joseph A. Walker, NASA
B-52 TAKE OFF:	0900, 13 June 1963
X-15 LAUNCH:	1000, 13 June 1963
LAUNCH AREA:	Delamar Lake, Nevada
FLIGHT DISTANCE:	240 miles
PROGRAMMED MAXIMUM SPEED:	3600 mph
PROGRAMMED MAXIMUM ALTITUDE:	220,000 feet
PROGRAMMED ENGINE TIME:	78 seconds
SUPPORT PERSONNEL:	
B-52 PILOT:	Major Russell Bement, USAF
LAUNCH PANEL:	Jack Russell, NASA
CHASE PILOTS:	F-104: William Dana, NASA F-104: Unassigned F-104: Unassigned T-38: Unassigned
PRIME CONTRACTOR (AIR FRAME)	North American Aviation, Inc.
PRIME CONTRACTOR (POWER PLANT)	Thiokol Chemical Corp.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805-CLifford 8-2111, Ext. 2-2961

FRC NEWS RELEASE 13-63

FOR RELEASE: Monday Morning
24 June 1963

IFRC

NASA SELECTS LEAR SIEGLER FOR SPACE PILOT PHYSIOLOGICAL STUDIES

The National Aeronautics and Space Administration has selected Lear Siegler, Incorporated of Santa Monica, California, to conduct a research program designed to maintain future aero-space pilots and astronauts in their best physiological state while in flight. The NASA's Flight Research Center, which will provide technical management of the program will conduct negotiations this month. The total cost of the design study program is expected to exceed one million dollars.

The proposed system, called a psychophysical information

MORE

acquisition processing and control system (PIAPACS), will have the capability to sense and record the various physical functions of the pilot and his vehicle. NASA scientists, with the aid of computers, then expect to use this information to provide controls for maintaining the pilot and his environment in the best operational state.

First step in the 18 month program will be the development and construction of a unique sensor system mounted in the pilot's garment and headgear. This system, which will replace the present system of attaching sensors to the pilot by the use of tape and internal instruments, will permit acquisition of data on a continuous basis without discomfort or distraction to the pilot. This sensor system will be worn by NASA pilots on flights, both simulated and actual, in a variety of aircraft including the supersonic F-104 and the rocket-powered X-15. Data obtained from these flights will be recorded and processed for computer reduction. The data from the computer would be used to display immediate and continuously the physiological and physical condition of the pilot at all times in flight. It could also be used as a basis for predictions and, if necessary, to control or correct any abnormal trends or conditions.

The final portion of the program will result in the conceptual design of the ultimate operational system for use in advanced spacecraft.

Lear Siegler was selected from 11 other firms for the contract.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805-CLifford 8-2111, Ext. 2-2961

FRC NEWS RELEASE 14-63

FOR RELEASE: IMMEDIATE

X-15 FLIGHT SLATED TO EXCEED 50 MILES ALTITUDE

The 87th flight of the X-15 in the joint NASA-USAF-USN research program is scheduled for the morning of June 26. The flight, piloted by Major Robert A. Rushworth, is planned to reach an approximate altitude of 275,000 feet - over 50 miles high.

The basic mission of Major Rushworth's flight is to familiarize the 38 year old pilot with comparatively high altitude flight. Future X-15 flights at this altitude will be required for projects including star tracker,

MORE

the photography of stars conducted outside the filtering effect of the earth's atmosphere; horizon definition, a method of providing improved guidance references for earth orbiting vehicles; and micro meteoride collection.

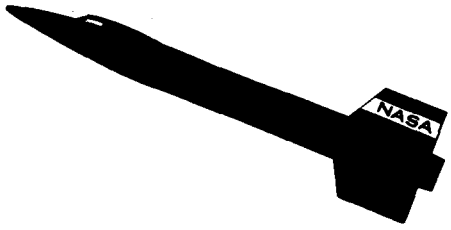
If the flight achieves the planned altitude it will meet the USAF requirements of flight above 50 miles (264,000 feet) for the issuance of the military rating of pilot astronaut to Major Rushworth. Only two other X-15 pilots, Joseph A. Walker, NASA chief research pilot, and Major Robert White, USAF, have flown higher than 50 miles.

The X-15 will be launched from a B-52 at 45,000 feet above Delamar Lake, Nevada, approximately 240 miles northeast of Edwards. Its rocket engine will be shut down by the pilot after 78 seconds of powered flight. Maximum speed for the 10 minute flight will be about 3600 mph.

This will be the 14th flight in the X-15 for Major Rushworth. He last flew the aircraft on June 18 to an altitude of 223,000 feet and a speed of 3477 mph.

The X-15 already holds world records for speed and altitude in manned winged vehicles with flights to an altitude of 314,750 feet and a speed of 4104 mph. A flight to a higher altitude is planned for next month.

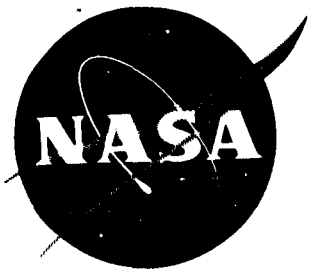
END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	87 (20 for X-15 number 3)
PILOT:	Major Robert A. Rushworth, USAF
NASA 1:	Joseph A. Walker, NASA
B-52 TAKE OFF:	0900 26 June 1963
X-15 LAUNCH:	1000 26 June 1963
LAUNCH AREA:	Delamar Lake, Nevada
FLIGHT DISTANCE:	240 miles
PROGRAMMED MAXIMUM SPEED:	3600 mph
PROGRAMMED MAXIMUM ALTITUDE:	275, 000 feet
PROGRAMMED ENGINE BURN TIME:	78 seconds
SUPPORT PERSONNEL:	
B-52 PILOT:	Major Russel Bement, USAF
LAUNCH PANEL:	Unassigned
CHASE PILOTS:	Unassigned
PRIME CONTRACTOR (AIR FRAME):	North American Aviation
PRIME CONTRACTOR (POWER PLANT):	Thiokol Chemical Corporation



WALKER TO CONDUCT X-15 PRESSURE STUDIES

AT ALTITUDES ABOVE 200,000 FEET

NASA's Joseph A. Walker will fly the X-15 number 1 today in a further evaluation of local air flow at relatively high altitude. This aircraft is equipped with a traversing probe, a movable measuring device used to measure air pressures over the surfaces of the X-15. The traversing probe extends itself every 4 seconds from the surface of the aircraft into the free air stream and provides measurements throughout its full range of travel, about 3 inches, as opposed to fixed distance measurements with the

MORE

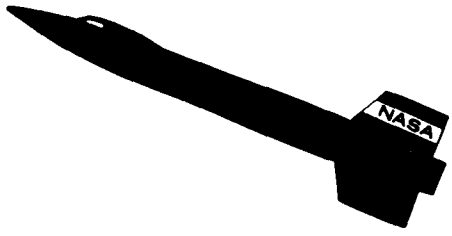
standard pressure devices. This unique device allows pressure readings under continuous movement and only requires two channels for transmitting the data.

This flight, the 3rd with this unusual measuring device, will be made at a higher altitude, approximately 220,000 feet, than the previous flights which never exceeded 123,000 feet. NASA engineers anticipate differences due to the increase in altitude.

The flight will also provide another evaluation of the reaction controls damping system and to conduct further optical degradation studies at relatively high altitude.

This will be the 23rd X-15 flight for Joe Walker. He is scheduled to be launched from Delamar Lake, Nevada, 240 miles northeast of here. The 10 minute flight should reach a maximum speed of about 3550 mph.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	88 (37 for X-15 number 1)
PILOT:	Joseph A. Walker, NASA
NASA 1:	Major Robert A. Rushworth, USAF
B-52 TAKE OFF:	0900 2 July 1963
X-15 LAUNCH:	1000 2 July 1963
LAUNCH AREA:	Delamar Lake, Nevada
FLIGHT DISTANCE:	240 miles
PROGRAMMED MAXIMUM SPEED:	3550 mph
PROGRAMMED MAXIMUM ALTITUDE:	220,000 feet
PROGRAMMED ENGINE BURN TIME:	81 seconds
SUPPORT PERSONNEL:	
B-52 PILOT:	Major Russel Bement, USAF
LAUNCH PANEL:	Jack Russoll, NASA
CHASE PILOTS:	Unassigned
PRIME CONTRACTOR (AIR FRAME):	North American Aviation
PRIME CONTRACTOR (POWER PLANT):	Thiokol Chemical Corporation

RUSHWORTH TO CONDUCT X-15 STABILITY EVALUATION

To conduct a pilots evaluation of aircraft stability with lower ventral removed is the mission assigned to Major Robert A. Rushworth in todays X-15 flight.

The previous 18 flights in the X-15 have been flown with the lower ventral removed but with all of the added stability equipment in use. However, NASA engineers are interested in the basic stability of the aircraft without the use of artifical systems. Therefore, todays flight will be made without the use of this equipment.

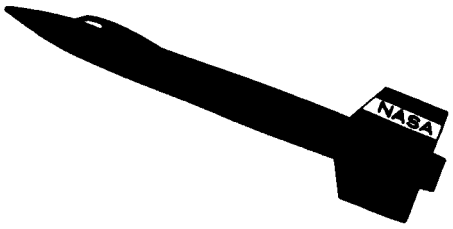
After Major Rushworth shuts down the rocket engine at about 3800 mph, he will disengage the yaw and roll dampers and intentionally perform several maneuvers intended to induce yaw. These maneuvers, or pulses, will be performed at several angles of attack from 2 degrees to 20 degrees with speed brakes closed, opened to 20 degrees and opened (full) to 35 degrees.

MORE

NASA engineers will then correlate the data obtained from this flight against the data from previous flights.

Maximum altitude on todays flight, the 89th in the joint NASA-USAF-USN X-15 research program, will be approximately 112,000 feet. The flight will be launched over Mud Lake, Nevada, 180 miles north of here and should last 10 minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	89 (38 for X-15 number 1)
PILOT:	Major Robert A. Rushworth, USAF
NASA 1:	John B. McKay, NASA
B-52 TAKE OFF:	0900 17 July 1963
X-15 LAUNCH:	1000 17 July 1963
LAUNCH AREA:	Mud Lake, Nevada
FLIGHT DISTANCE:	180 miles
PROGRAMMED MAXIMUM SPEED:	3800 mph
PROGRAMMED MAXIMUM ALTITUDE:	112,000 feet
PROGRAMMED ENGINE BURN TIME:	84 seconds
SUPPORT PERSONNEL:	
B-52 PILOT:	Unassigned
LAUNCH PANEL:	Bruce Peterson, NASA
CHASE PILOTS:	Unassigned
PRIME CONTRACTOR (AIR FRAME):	North American Aviation
PRIME CONTRACTOR (POWER PLANT):	Thiokol Chemical Corporation

NASA'S WALKER TO FLY X-15 TO 60 MILES HIGH

NASA's Joseph A. Walker, chief pilot in the joint NASA-USAF-USN X-15, program, is scheduled to fly the X-15 number 3 to 315,000 feet today. As such, this flight could surpass the existing X-15 altitude record of 314,750 feet that was established on July 17, 1962.

The flight will be launched from Smith's Ranch, Nevada, thereby making it the longest distance yet for an X-15 flight - 315 miles. The previous longest flights were launched from Delamar Lake, Nevada, a distance of 240 miles. Smith's Ranch, a dry lake bed, is 100 miles east of Reno, Nevada.

This flight will serve as an altitude build-up flight for NASA pilot Walker. Another X-15 flight is now being planned to take place in the next three weeks that will carry him to approximately 350,000 feet.

MORE

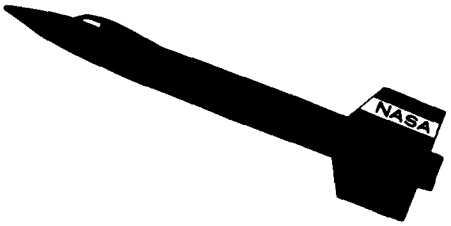
As the X-15 passes through 250,000 feet on todays flight, an automatic timer will release a nitrogen filled balloon from the tail of the aircraft. This balloon, 30 inches in diameter, will be used to obtain density measurements as the X-15 continues its flight and will drop off as the aircraft descends into the atmosphere.

By recording the induced drag caused by the balloon on a strain gage, NASA engineers will be able to determine altitude density. However, this density will definitely be influenced by the heat and shock waves caused by the X-15.

After reentry through the earth's atmosphere, which will be accomplished by using an angle of attack of 23 degrees, Walker will trade some of his airspeed to climb back to about 90,000 feet. Although not needed for this flight, a maneuver of this type allows the X-15 to cover more ground distance.

This will be the 90th flight in the X-15 research program and the 24th for Joseph Walker. The maximum speed will be about 3700 mph.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	90 (21 for X-15 number 3)
PILOT:	Joseph A. Walker, NASA
NASA 1:	John B. McKay, NASA
NASA 1 BACK-UP (BEATTY, NEVADA:	Milton O. Thompson, NASA
B-52 TAKE OFF:	0900 18 July 1963
X-15 LAUNCH:	1000 18 July 1963
LAUNCH AREA:	Smith's Ranch, Nevada
FLIGHT DISTANCE:	315 miles
PROGRAMMED MAXIMUM SPEED:	3700 mph
PROGRAMMED MAXIMUM ALTITUDE:	315,000 feet
PROGRAMMED ENGINE BURN TIME:	83 seconds
SUPPORT PERSONNEL:	
B-52 PILOT:	Unassigned
LAUNCH PANEL:	Stanley Butchart
CHASE PILOTS:	Unassigned
PRIME CONTRACTOR (AIR FRAME):	North American Aviation
PRIME CONTRACTOR (POWER PLANT):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805-CLifford 8-2111, Ext. 2-2961

FRC NEWS RELEASE
14-63

FOR RELEASE: 25 July 1963

ANTELOPE VALLEY RESIDENT MAKES 30 DAY SIMULATED SPACE TRIP

Roger J. Barnicki, X-15 pilot equipment specialist for the National Aeronautics and Space Administration's Flight Research Center, is currently undergoing a 30 day simulated space trip designed to study human-environment relationships in preparation for future space travelers. The program is being conducted by The Boeing Company of Seattle, Washington for NASA's Office of Advanced Research and Technology.

Mr. Barnicki entered the chamber that simulates quarters for a space station or at a moon base with four other men on July 16. The men will be isolated for the rest of the 30 days.

This unique chamber possesses the necessary equipment that will provide for the men during their stay. This includes a water regeneration system that is capable of converting all waste water for reuse and an oxygen

(MORE)

system that performs the same task.

His diet is the same that has been proposed for the extended trips of the two man Gemini space vehicle. All of the food has been dehydrated through a special freeze-dry process and will be of a low bulk nature which will provide 2600 calories daily. Specific items, some of them packaged in squeeze tubes for simulated weightless conditions, range from peanut butter sandwiches and bacon and eggs to a spaghetti dinner and strawberries.

Specific duties have been imposed on Mr. Barnicki that an actual space crewman might be expected to perform, including simulated navagation, scope reading, tracking, decision making, attention span tests and others. Psychologists outside the chamber are able to observe the tests through one-way glass.

A support crew outside the chamber is constantly analyzing the bacteria build-up inside the capsule and they are monitoring the toxic elements. The influence of these elements on the crew effectiveness under long term space flight conditions is not presently known.

Mr. Barnicki, who volunteered for the experiment, has been employed by NASA for the previous 10 years. He is 26 years old and lives in Lancaster with his wife and 4 children.

(END)

ALTITUDE PREDICTING DEVICE TO BE EVALUATED ON 360,000 FOOT X-15 FLIGHT

A new device that is expected to be capable of providing inflight predictions of maximum altitude will be evaluated on today's X-15 flight. The flight, which will be piloted by chief X-15 pilot Joseph A. Walker, is programmed to reach an altitude of approximately 360,000 feet, a new record for winged aircraft.

Walker has previously flown the X-15 to 350,000 feet on July 19, 1963.

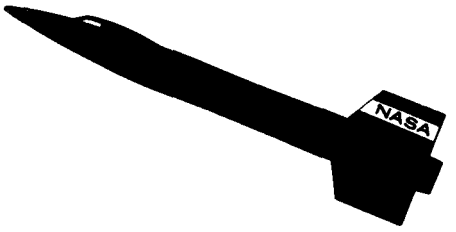
This device, designed and built by engineers of NASA's Flight Research Center, uses an internal computer to provide instantaneous measure-

(MORE)

ments of the aircrafts climb angle and the energy developed by the rocket engine. This information is then displayed to the pilot through the use of an altimeter that displays the predicted altitude. The device is expected to be accurate to within 15,000 feet.

The flight will be launched at Smith's Ranch, Nevada, 315 miles north of here. The engine is scheduled to burnout due to propellant exhaustion in approximately 84-1/2 seconds. Maximum speed during the 12 minute flight is expected to reach approximately 3,700 mph. The climb angle should be about 48 degrees, the highest yet.

(END)



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	91 (22 for X-15 number 3)
PILOT:	Joseph A. Walker, NASA
NASA 1:	John B. McKay, NASA
NASA 1 BACK-UP (BEATTY, NEVADA):	Milton O. Thompson, NASA
B-52 TAKE OFF:	0900 6 August 1963
X-15 LAUNCH:	1000 6 August 1963
LAUNCH AREA:	Smith's Ranch, Nevada
FLIGHT DISTANCE:	315 miles
PROGRAMMED MAXIMUM SPEED:	3700 mph
PROGRAMMED MAXIMUM ALTITUDE:	360,000 feet
PROGRAMMED ENGINE BURN TIME:	84-1/2 seconds
SUPPORT PERSONNEL:	
B-52 PILOT:	Unassigned
LAUNCH PANEL:	Stanley Butchart
CHASE PILOTS:	Unassigned
PRIME CONTRACTOR (AIR FRAME):	North American Aviation
PRIME CONTRACTOR (POWER PLANE):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805-CLifford 8-2111, Ext. 2-2961

FRC NEWS RELEASE
17-63

FOR RELEASE: IMMEDIATELY

WINGLESS VEHICLE UNDERGOES FLIGHT TESTS AT NASA'S FLIGHT RESEARCH CENTER

Flight testing of a wingless vehicle, referred to as a lifting body has begun at the National Aeronautics and Space Administration's Flight Research Center at Edwards, California. The tests are being conducted by Flight Research Center engineers to study the low speed flight characteristics of the vehicle.

MORE

The vehicle being tested is a lightweight research article, however, its configuration is representative of a class of reentry vehicle that has been under development in NASA research centers over a period of about six years. The objective sought through this class of vehicle is the attainment of maximum ratios of useful volume to surface area in order to reduce structural weight, as well as to reduce problems of aerodynamic heating while reentering the earth's atmosphere from a space mission. These vehicles, which have application to space ferry missions, are capable of maneuvering flight and of horizontal landing at a predetermined location on land. The vehicle under test was planned by personnel of the Flight Research Center in accordance with a configuration design suggested by Dr. Alfred J. Eggers of the NASA Ames Research Center.

The flight test program is designed to investigate man's ability to control the vehicle during low speed operations, particularly during the landing phase. Such areas as performance inflight stability, control effectiveness, handling qualities and pilot visibility requirements will be studied. The program will be conducted in a manner similar to the NASA Paresev (paraglider research vehicle) flight program that began at the Flight Research Center in early 1962.

After completion of wind tunnel tests of the flight vehicle this spring at the Ames Research Center, flight testing began with a series of ground runs. Later these ground tows developed sufficient speed to enable the vehicle to fly off the ground and attain heights up to 20 feet. This was followed by airborne tows behind an aircraft with release at altitude, and a glide flight back to landing on the dry lake bed.

The lifting body research vehicle has already made five air tow flights, each of these flights begins with a towed take-off behind a C-47 aircraft (DC-3). The lifting body is then towed to an altitude of 10,000 feet or higher at a speed of about 110-115 kts. (130-135 mph). After release from the tow, which is instituted by the lifting body pilot, the vehicle glides to a landing, at about the same speeds. During this glide the pilot is capable of making 360 degree turns in either direction at varying angles of bank.

The flare before landing is instituted at approximately 400 feet above the ground. Touch down occurs at about 70 kts. (80 mph) and is quite smooth. The landing roll out normally requires 250 feet.

MORE

Future plans include a flight test program to determine the handling qualities and performance, and the effects of some control changes and other modifications. Plans for construction of a somewhat larger research vehicle, having about the same weight as a possible mission vehicle are being considered.

Robert D. Reed is the lifting body program manager at NASA's Flight Research Center and Victor Horton is project leader. The assigned project pilot is Milton O. Thompson, who was also the first pilot to fly the Paresev.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

M-2 FACT SHEET

DIMENSIONS:

Length - 20 feet
Height - 10 feet
Width - 13 feet
Weight (with pilot) - 1140 lbs
Half-conical in shape with no wings

CONSTRUCTION:

The hull was constructed by the Sailplane Corporation of America and is made out of plywood. The inner-carriage is tubular steel and was built by the Flight Research Center.

CONTROLS:

Two vertical rudders - yaw
Two trailing edge flaps - pitch
Two elevons (working in synchronization) - pitch
(working in opposite) - roll

AUXILIARY SYSTEMS:

ROCKET ENGINE:

A solid propellant rocket with 240 lbs of thrust developed by the Naval Ordnance Test Center is provided for pilot-optional use to cushion the landing.

EJECTION SYSTEM:

A lightweight rocket propelled ejection seat built by the Weber Aircraft Company is provided for the pilot. This seat has the capability of zero speed ground level ejection.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805-CLifford 8-2111, Ext. 2-2961

FRC NEWS RELEASE
18-63

FOR RELEASE: 12 September 1963

Mr. Donald Bellman, program manager for the Lunar Landing Research Vehicle that will be flown at NASA's Flight Research Center next year, will address a meeting of the American Society for Quality Control on September 17, 1963.

The Lunar Landing Research Vehicle will be used by NASA to extensively explore the problems that may be encountered in

MORE

landing a manned vehicle on the moon's surface. Mr. Bellman's address will be concerned with the vehicles and their intended flight program.

The meeting will be held at Hody's Restaurant in North Hollywood and will begin at 7:00 p.m.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805-CLifford 8-2111, Ext. 2-2961

FRC NEWS RELEASE

FOR RELEASE: 12 September 1963

19-63

Joseph A. Walker, chief research pilot for the National Aeronautics and Space Administration's Flight Research Center will address the San Bernardino Rotary Club on September 17, 1963. Mr. Walker holds the worlds speed and altitude records for manned winged vehicles with flights in the rocket powered X-15 to a speed of 4104 mph. and to an altitude of 354,000 feet.

MORE

The luncheon meeting will be held at the Masonic Temple in San Bernardino, California and will start at 12:00 noon.

Enclosed is biographical data on Mr. Walker for your use.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805-CLifford 8-2111, Ext. 2-2961

FRC NEWS RELEASE
20-63

FOR RELEASE: 12 September 1963

Mr. Ralph Jackson, Public Information Officer for NASA's Flight Research Center will address the Bakersfield chapter of the American Society for Public Administration on September 18, 1963.

Mr. Jackson's address will deal with some of the projects being carried out at the Flight Research Center. Besides the rocket powered X-15, these include the flex-winged paraglider, the lunar landing research vehicle and the M-2, a wingless flight vehicle.

MORE

The luncheon meeting will be held at the Skyway House at the Bakersfield Airports.

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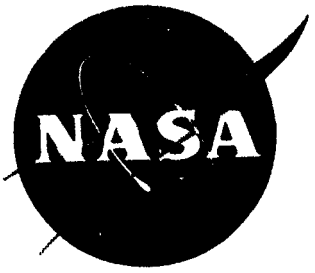


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

CROSS RANGE INDICATOR TO BE EVALUATED ON X-15 FLIGHT

Major Robert A. Rushworth will pilot the X-15 number one today in a research flight designed to evaluate a new cross range indicator and to study induced air turbulence. The flight will reach an approximate speed of 3700 mph and will slightly exceed 100,000 feet.

The cross range indicator is a device designed and built by NASA engineers that is expected to provide ground track accuracy to within one mile or less. This system, which is self contained and needs no ground

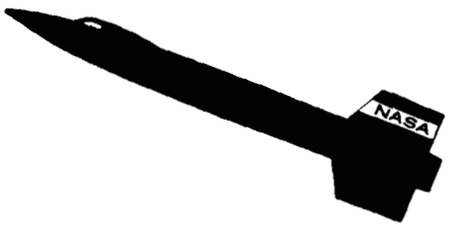
MORE

sent information once the X-15 is launched, receives information from the X-15 inertial guidance system and displays it to the pilot on an instrument dial with a directional needle.

A secondary experiment will be to measure the turbulence that is built up as the X-15 speeds through the air at relatively high speeds. This will be accomplished by photographing and measuring the induced distortion.

The 11 member flight will be launched from Delamar Lake, Nevada, 220 miles northeast of Edwards. Engine burn time is slated for 83 seconds.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	92 (39 for X-15 number 1)
PILOT:	Major Robert A. Rushworth, USAF
NASA 1:	Joseph A. Walker, NASA
B-52 TAKE OFF:	0900 18 September 1963
X-15 LAUNCH:	1000 18 September 1963
LAUNCH AREA:	Delamar Lake, Nevada
FLIGHT DISTANCE:	220 miles
PROGRAMMED MAXIMUM SPEED:	3700 mph
PROGRAMMED MAXIMUM ALTITUDE:	Over 100,000 feet
PROGRAMMED ENGINE BURN TIME:	83 Seconds
SUPPORT PERSONNEL:	
B-52 PILOT:	Col. Fitzhugh Fulton, USAF
LAUNCH PANEL:	Jack Russel, NASA
CHASE PILOTS:	Unassigned
PRIME CONTRACTOR (AIR FRAME):	North American Aviation
PRIME CONTRACTOR (POWER PLANT):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805-CLifford 8-2111, Ext. 2-2961

FRC NEWS RELEASE
23-63

FOR RELEASE: 9/29/63

NASA research pilot Milton Thompson and Air Force Captain Joe Engle prepare to start pressure suit checkouts at NASA's Flight Research Center in preparation for their first flights in the rocket powered X-15 aircraft. The full pressure suit, manufactured by the David Clark Company, contains an independent life support system and is worn by all X-15 pilots.

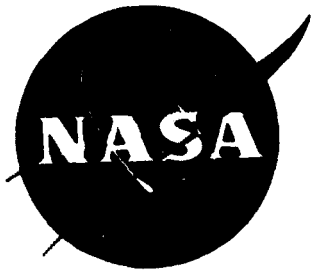
Thompson, who recently flew NASA's M-2 lifting body, and Engle were selected last spring as X-15 pilots. Both are expected to fly the research aircraft later this year.

END

NASA

E-10430

MOVE



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

RUSHWORTH TO MAKE HEAT TRANSFER RATE FLIGHT IN THE X-15

Major Robert A. Rushworth will pilot the X-15 on its 93rd flight in the Joint NASA-Air Force-Navy research program to investigate heat transfer rates with a new sharp edged vertical tail fin installed on the X-15. The planned flight maximums are scheduled to be approximately 80,000 feet and about 2800 mph.

The new sharp leading edge on the top vertical tail, 1/100 inch radius as compared to the previous blunt edge of 1/2 inch radius, was designed to reduce the complexity of the air flow around the tail surfaces of the aircraft which influences the rate of heat transfer. NASA engineers will then correlate data obtained from flights made with both the sharp and the blunt leading edge to obtain more data concerning heat transfer rates.

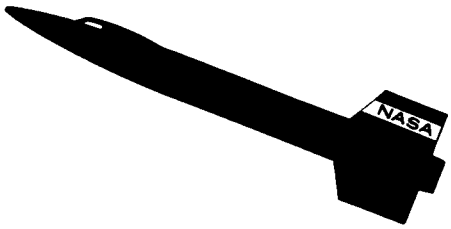
MORE

As the X-15 is the only present vehicle with blunt leading edges capable of hypersonic flight, heat transfer data gained from the X-15 can be used for proposed future vehicles with planned blunt leading edges.

Major Rushworth will also perform several roll control maneuvers with the roll and yaw dampers intentionally turned off to evaluate aircraft stability.

The X-15 will be launched from the B-52 near Hidden Hills, a dry lake bed near the California-Nevada state line. Major Rushworth, attempting to maintain a stabilized speed condition, will reduce his power control to minimum thrust, about 40% and use speed brakes. Rocket engine burn time should be about 118 seconds and the 125 mile trip should last about 9 minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	93 (23 for X-15 number 3)
PILOT:	Major Robert A. Rushworth, USAF
NASA 1:	Jack McKay, NASA
B-52 TAKE-OFF:	0900 10 October 1963
X-15 LAUNCH:	1000 10 October 1963
LAUNCH AREA:	Hidden Hills, Calif.
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	2800 mph
PROGRAMMED MAXIMUM ALTITUDE:	Over 80,000 feet
PROGRAMMED ENGINE TIME:	118 seconds
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame)	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant)	Thiokol Chemical Corp.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE
25-63
15 October 1963

FOR RELEASE: 21 October 1963

PILOT VISIBILITY REQUIREMENTS STUDIED BY NASA FLIGHT RESEARCH CENTER

How much visibility does a pilot require to fly an aircraft through all phases of flight, including take-off, navigation, and landing? Engineers and pilots of the National Aeronautics and Space Administration's Flight Research Center at Edwards, California, have completed the first phase of a program designed to obtain this information that may aid in the design of future vehicles.

MORE

Present aircraft visibility requirements demand a large amount of glassed area for pilot visibility. However, this same amount of glassed area on future vehicles that are capable of orbital flight and atmospheric reentry would impose serious heat shielding and weight problems on the vehicles. By reducing the amount of viewport area, the severity of these problems can be reduced.

To evaluate the pilot visibility requirements, NASA engineers configured a light two-place aircraft, an L-19 supplied by the US Army, with two wide angle monocular telescopes. This optical system was mounted in such a position that it allowed the evaluation pilot in the rear seat to fly the aircraft using the monoculars as his sole source of visibility. A safety pilot also flew in the front seat of the aircraft.

The optical system, originally developed for possible use in armored vehicles by the Army, consists of two wide-angle, unity power monocular telescopes mounted, not in parallel as in a normal pair of binoculars, but with their axis convergent to an angle of 55 degrees toward the pilot. A sheet rubber viewing hood eliminated the pilots peripheral vision.

The two telescopes only exposed four square inches of glass area and still afforded the pilot a 140 degree visual field horizontally and 90 degrees vertically. 40 degrees of the horizontal field was overlap between the two telescopes.

About 40 flights were made with the aircraft using the optical system. Take-offs, inflight navigation and maneuvering, and landings were accomplished during these flights by the evaluation pilot using the optical system as his source of visibility. Two flight instruments, an airspeed indicator and an altimeter, were also visible to the pilot.

Based on the results of the first phase of the program, plans have been made to configure a high speed jet aircraft with a similar optical system for evaluation.

Flight Research Center engineer, Paul Chenoweth, was the program manager and William Dana served as project pilot during the evaluation.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE
26-63
25 October 1963

FOR RELEASE: October 28, 1963

THOMPSON TO MAKE HIS FIRST FLIGHT IN X-15

Milton O. Thompson, research pilot for the National Aeronautics and Space Administration's Flight Research Center, is scheduled to make his first flight in the X-15 rocket powered aircraft on October 29. He is the

MORE

second of two pilots named last spring to join the X-15 pilot-team in the joint NASA-Air Force-Navy X-15 research program. The other pilot, Captain Joe H. Engle, made his first X-15 flight on October 7. Engle and Thompson are the 8th and 9th men to fly the X-15 which currently holds the world speed and altitude records for winged aircraft.

Thompson, who is 37 and has been flying for NASA since 1957, has served as project pilot on the Paresev, a flex wing paraglider, and the M-2, a wingless vehicle that may be the prototype of future spacecraft. He was also selected by the USAF as the only civilian pilot for the X-20 Dynasoar program.

Thompson's flight plan is similar to the one used by Captain Engle. The X-15 will be air launched from the B-52 over Hidden Hills, a dry lake bed on the California-Nevada state line. By reducing the power setting to about 50% of available power, flight maximums should not exceed approximately 2,700 mph and about 70,000 feet. The 125 mile trip should last 9 minutes.

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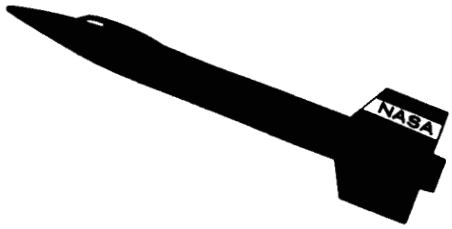


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	93 (40 for X-15 number 1)
PILOT:	Milton O. Thompson, NASA
NASA 1:	Jack McKay, NASA
B-52 TAKE-OFF:	1200 29 October 1963
X-15 LAUNCH:	1300 29 October 1963
LAUNCH AREA:	Hidden Hills, Calif.
FLIGHT DISTANCE:	125 Miles
PROGRAMMED MAXIMUM SPEED:	2700 mph
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 70,000 feet
PROGRAMMED ENGINE BURN TIME:	122 seconds
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame)	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plane)	Thiokol Chemical Corp.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE
27-63
29 October 1963

FOR RELEASE: IMMEDIATELY

REPAIRS, MODIFICATIONS UNDERWAY FOR DAMAGED X-15

X-15 airplane number 2 will return to flight status early next year in an extended hypersonic flight research program with a higher speed capability, as the result of a decision by the US Air Force. The airplane, damaged last November in a landing accident, will be repaired and modified to increase its speed and utility for conducting aerospace experiments.

MORE

The Air Force has signed a letter contract with North American Aviation Inc., builders of all three X-15's, to do the work. With an increased propellant capacity for its rocket engine, the X-15 number 2 will have a longer flight duration. The decision marks the first major change in the X-15 configuration since the airplane was designed nearly eight years ago.

The modified aircraft, one of three operated by NASA and the Air Force at Edwards AFB, Calif. will carry an additional 13,500 lbs. of propellants to increase engine running time to 145 seconds at full throttle. Present maximum is 86 seconds at 100 percent thrust. The added burning time theoretically will raise the speed by some 1300 mph but because of structural and aerodynamic heating, and other considerations, the actual increase will be somewhat lower.

Although the modifications will increase the speed, the X-15 flight will be restricted to its present altitude capability. NASA engineers explained that the ceiling is limited by the problem of reentry to the earth's atmosphere from nearby space. That limitation is due to factors of high dynamic pressure, high "g" forces in recovery and heating limitations on the airplane's structure.

Main modifications to the damaged airplane will be made to its landing gear, wings and fuselage. Other modifications include the addition of external droppable tanks to carry liquid oxygen and ammonia propellants, and pressurizing helium gas. Another important change will be the provision for installation of two 50 gallon spherical tanks at the center of gravity in the reworked fuselage mid-section, to store liquid hydrogen for anticipated advanced propulsion experiments. The airplane may be used in the future as a test bed for ramjets slung under the fuselage. It will be lengthened 29 inches and will stand 19 inches higher on the ground because of modifications and the strengthening of its nose wheel and main landing-skid gear.

Additional engineering design and test work will be performed to develop windshield material to accomodate the increased heating and thermal stresses on the windshield and framework. Methods for applying ablative material to the X-15 for heat protection will be provided. Although the aircraft originally was designed for 1200 degrees F temperature limits, it has reached a peak of 1323 degrees on some flights.

Other modifications will permit quick removal of the ventral fin and attachments of experimental packages in its place. Another change will enable technicians to install removable wing-tip panels for material research. Minor changes are being made to the B-52 airplane which carries the X-15 aloft to launch at 45,000 feet.

MORE

The X-15 was conceived and built to obtain research information on aerodynamic, structures, heating problems, stability and control, operational and biotechnological factors and other data at a variety of speed and altitude combinations. The X-15 is operated under a joint NASA-Air Force-Navy flight research program for manned, winged vehicles, at hypersonic speed in the atmosphere and nearby space.

X-15 number 2 was extensively damaged November 9, 1962 in an emergency landing at Mud Lake, Nev. The pilot, John B. McKay, NASA, escaped with minor injuries. The plane is being modified at North American's Los Angeles Division Plant, where it was built. The other two X-15's are in operation at NASA's Flight Research Center at Edwards.

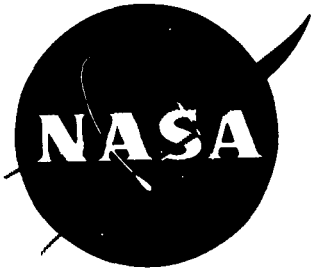
Original designed goals for the X-15 was a peak altitude of at least 250,000 feet and speed of 4000 mph. Air Force and NASA pilots have flown the airplane to a top speed of 4104 mph and have topped mach 5.0 (about 3500 mph) more than 40 times. It has made seven flights at the designed altitude goal or higher and achieved a maximum altitude of 354,200 feet.

The small black airplane, power by a Thiokol, Reaction Motors Division, YLR-99 rocket engine of 59,000 lbs. thrust is taken to altitude by a B-52, then released to fly on its own power before gliding to a landing on the hard flat bed of Rogers Dry Lake at Edwards AFB. The three X-15's have made a total of 93 flights to date.

In addition to the increase speed advantage, the modified X-15 will be useful for more aeronautical and space experiments. The "follow-on" studies, would use the X-15 as a "service" airplane, including work with star-tracking camera equipment, propulsion, control systems, and materials tests.

North American is expected to complete the work on the new contract by March 1, 1964. The contract, signed by the USAF Systems Command, Aeronautical Systems Division, Wright Patterson AFB, Ohio, will amount to about $5 million.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

RUSHWORTH TO MAKE HEAT TRANSFER RATE FLIGHT IN THE X-15

Major Robert A. Rushworth will pilot the X-15 on its 94th flight in the joint NASA-Air Force-Navy research program to investigate heat transfer rates with a new sharp edged vertical tail fin installed on the X-15. The planned flight maximums are scheduled to be approximately 80,000 feet and about 2800 m.p.h.

MORE

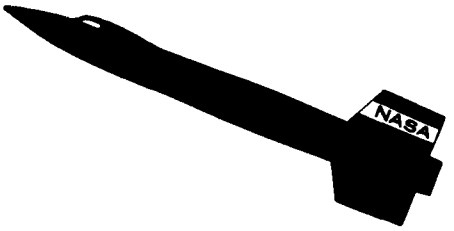
The new sharp leading edge on the top vertical tail, 1/100 inch radius as compared to the previous blunt edge of 1/2 inch radius, was designed to reduce the complexity of the air flow around the tail surfaces of the aircraft which influences the rate of heat transfer. NASA engineers will then correlate data obtained from flights made with both the sharp and the blunt leading edge to obtain more data concerning heat transfer rates.

As the X-15 is the only present vehicle with blunt leading edges capable of hypersonic flight, heat transfer data gained from the X-15 can be used for proposed future vehicles with planned blunt leading edges.

Major Rushworth will also perform several roll control maneuvers with the roll and yaw dampers intentionally turned off to evaluate aircraft stability.

The X-15 will be launched from the B-52 near Hidden Hills, a dry lake bed near the California-Nevada state line. Major Rushworth, attempting to maintain a stabilized speed condition, will reduce his power control to minimum thrust, about 40% and use speed brakes. Rocket engine burn time should be about 118 seconds and the 125 mile trip should last about 9 minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	94 (23 for X-15 number 3)
PILOT:	Major Robert A. Rushworth, USAF
NASA 1:	Jack McKay, NASA
B-52 TAKE-OFF:	0900 7 November 1963
X-15 LAUNCH:	1000 7 November 1963
LAUNCH AREA:	Hidden Hills, Calif.
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	2800 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 80,000 feet
PROGRAMMED ENGINE TIME:	118 seconds
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame)	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant)	Thiokol Chemical Corp.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

ENGLE TO MAKE SECOND X-15 FLIGHT

Captain Joe H. Engle will make his second flight in the X-15 on November 14. He first flew the rocket powered aircraft on October 7, 1963 to a speed of 2795 m.p.h. and 74,000 feet. His planned flight maximums on the second

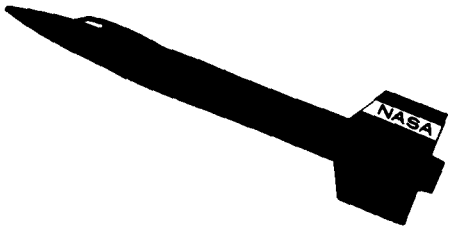
MORE

flight are an altitude of about 90,000 feet and a speed of approximately 3,000 m.p.h.

After about two minutes of flight, the 31 year old pilot will roll the X-15 into a 90 degree left wing down attitude. This will result in a left turn of approximately 20 degrees. During this maneuver, he will increase his angle of attack to approximately 15 degrees and perform several rudder step impulses in order to familiarize himself with the stability of the X-15. After completion of this, he will then roll the aircraft into a 60 degree right wing down turn and perform several more rudder step impulses. This turn will return the X-15 to its normal straight line flight path.

The X-15 will be launched from a B-52 near Hidden Hills, a dry lake bed on the California-Nevada state line. The 125 mile flight will cross the lower part of Death Valley and take about 7 minutes. This will be the 95th flight of an X-15 in the joint NASA-Air Force-Navy research program.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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FACT SHEET

FLIGHT:	95 (41 for X-15 number 1)
PILOT:	Captain Joe H. Engle, USAF
NASA 1:	Jack McKay, NASA
B-52 TAKE-OFF:	0900 14 November 1963
X-15 LAUNCH:	1000 14 November 1963
LAUNCH AREA:	Hidden Hills, Calif.
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	3,000 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 90,000 feet
PROGRAMMED ENGINE BURN TIME:	86 seconds
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corp.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE
31-63
13 November 1963

FOR RELEASE: November 15, 1963 a.m.
(Simultaneous release with NASA Headquarters)

NASA CONDUCTS SST OPERATIONS STUDY

A study of some of the possible flight conditions that may occur with the actual flight of supersonic transports (SST) has been completed by engineers and pilots of the National Aeronautics and Space Administration's Flight Research Center at Edwards, California, working with members of the Federal Aviation Agency. The program had two main purposes; (1) to investigate possible air traffic control problems and (2) to provide operational flight data for the planning of future SST flights.

MORE

Proposed flights of the SST will differ from those in current use by subsonic jet transports. Besides cruising at higher airspeeds and altitudes, the SST will also require a more rapid climb to an altitude that will minimize sonic boom disturbance. It is estimated that this climb could expend as much as 35% of the SST trip fuel load.

An A5A jet aircraft was used during the program as the simulated SST. This aircraft was selected by NASA as it possessed the necessary thrust to weight ratio to closely simulate the performance of the SST up to an altitude of 50,000 feet. The A5A is a two-place jet aircraft built for the U. S. Navy by North American Aviation. Because of the Navy's interest in the national SST program, the A5A was available for NASA's use. The 70 foot long aircraft is capable of speeds of almost twice the speed of sound and has been flown to an altitude of 91,000 feet.

Approximately 21 flights were made along federal airways that entered Los Angeles. These flights followed two flight profiles that were based upon results derived from Supersonic Commercial Air Transport (SCAT) studies conducted earlier by NASA; one for a variable-sweep wing configuration and the other for a delta-wing canard configuration.

Starting at level flight at an altitude of 50,000 feet and at a speed of Mach 1.7 (1.7 times the speed of sound), the SST simulated portion of the flights began with a decelaration to a speed of Mach 1.4, where a descent to a lower altitude was initiated. During the descent, the aircraft was slowed to subsonic speeds prior to reaching 30,000 feet, and reached an altitude of 20,000 feet at a speed of about 340 m.p.h., not much faster that present day jet transports.

FAA air controllers reported that they experienced no difficulty in descending, integrating and landing the simulated SST at the Los Angeles International Airport along with other arrival traffic.

The departure from Los Angeles was made at a subsonic speed until passing through 32,000 feet. The aircraft then accelerated to a supersonic simulated SST cruise speed.

The FAA controllers reported that the simulated SST did present more difficulty in the take-off and climb-out phase of the flight due to the increased performance of the aircraft. Special consideration was given to the faster rate of climb, increased engine noise, and the critical fuel useage during this portion of the flight.

To acquire operational flight data, simulated SST cruise flights were conducted. A round trip flight was made between Los Angeles, California, and Albuquerque, New Mexico, at a cruise speed of Mach 1.5. Night operations were also flown.

MORE

During these flights it was shown that the increased aircraft performance required greater advance notice to the pilot of flight clearance changes. Otherwise, flight clearance limits such as holding instructions and altitude limits would result in overshoot or an undesireable amount of acceleration forces.

Inflight weather information was found to be more important during SST flight operations because changes in outside air temperature pressure conditions greatly influenced the times and distances required to accelerate from subsonic to Mach 2 flight.

The study was made for NASA's Office of Advanced Research and Technology. It was under the direction of Donald L. Hughes, A5A program manager, and William H. Dana, project pilot, both of NASA's Flight Research Center. Heading the project for FAA's office of supersonic development and the FAA western region was Joseph J. Tymczyszyn. Commander G. R. Otis, USN, of the Bureau of Naval Weapons provided technical liaison for the Navy.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

NASA research pilot Milton Thompson is scheduled to make his second flight in the X-15 rocket aircraft on November 19. This will also be his check-out flight in the X-15 number 3 airplane that possesses the adaptive control system. This will be the first flight in this aircraft for either of the two new pilots selected last spring for the X-15 pilot team.

MORE

The adaptive control system, manufactured by Minneapolit-Honeywell was installed on the X-15 number 3 during repairs following an explosion that occurred during a ground engine run on June 8, 1960. The system has the ability to sense the ability to sense the atmospheric conditions that surround the X-15 and to automatically provide the proper amount and type of control, either aerodynamic or reaction, to meet these conditions.

Thompson, who made his first X-15 flight on October 29, is programmed to reach a maximum speed of about 3,100 miles per hour and a peak altitude of about 92,000 feet. His flight plan includes a 20 degree turn to the left and then back to the right during which he will perform several intentional rudder impulses to familiarize himself with the stability of the X-15.

The flight will be air launched near Hidden Hills and cover the 125 miles back to Rogers Dry Lake in approximately 9 minutes.

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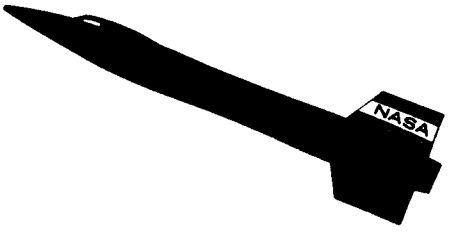

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	96 (24 for X-15 number 3)
PILOT:	Milton O. Thompson, NASA
NASA 1:	Jack McKay, NASA
B-52 TAKE-OFF:	0900 19 November 1963
X-15 LAUNCH:	1000 19 November 1963
LAUNCH AREA:	Hidden Hills, Calif.
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	3,100 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 92,000 feet
PROGRAMMED ENGINE BURN TIME:	86 seconds
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corp.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE
32-63
14 November 1963

FOR RELEASE: November 20, 1963
A.M.

THREE PILOTS TO MAKE THEIR FIRST FLIGHT IN NASA'S M-2 LIFTING BODY RESEARCH VEHICLE

Three pilots, including the first man to fly faster than the speed of sound, will make their first flights in the M-2 lifting body research vehicle this week at the National Aeronautics and Space Administration's Flight Research Center. The three pilots, Air Force Colonel Charles

MORE

"Chuck" Yeager, NASA's Bruce Peterson and Donald Mallick, will undergo familiarization flights in the unique vehicle under the direction of NASA's M-2 project pilot Milton Thompson. Until now, Thompson is the only man who has ever flown the M-2.

Yeager, who is now the Commandant of the Aerospace Research Pilots School, made history when he became the first man to exceed the speed of sound. He piloted the Air Force-NACA X-1 to a speed of 700 miles per hour, Mach 1.06, on October 14, 1947. His top speed in the M-2 probably will not exceed 125 m.p.h.

No stranger to flight in unique vehicles, Peterson is the current project pilot on NASA's paraglider. He has made more than 120 flights in the unpowered research vehicle with which NASA is evaluating the flex-wing concept for possible use in the recovery of space vehicles and rocket boosters.

Mallick, a research pilot formerly with NASA's Langley Research Center, is also currently assigned as co-project pilot on the airborne variable stability program that the Flight Research Center is conducting.

The M-2 research vehicle is towed to an altitude of about 12,000 feet by another aircraft. It is then released for glide flight back to earth. The lifting body concept is under study by NASA as a possible future space vehicle that is capable of landing on earth under pilot control.

The three pilots began their check-out procedures with flights in a conventional glider. They also made ground runs in the lifting body as it was towed by a ground vehicle.

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NEWS RELEASE

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Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE
35-63
21 November 1963

FOR RELEASE:
IMMEDIATE

U.S. Representative James D. Weaver recieves a cockpit check-out in the X-15 research aircraft from chief X-15 pilot Joe Walker of the National Aeronautics and Space Administration's Flight Research Center. Congressman Weaver and other members of the House Committee on Science and Astronautics visited the NASA Center earlier this month.

Walker holds the world unoffical speed and altitude records for manned winged vehicles with flights in the rocket-powered X-15 to a speed of 4104 miles per hour and an altitude of 354,200 feet.

-30-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

X-15 FLIGHT TO EVALUATE NEW NAVIGATION DEVICE

A new instrument that is designed to assist the pilot in inflight navigation will be evaluated on today's X-15 flight. Called the cross range indicator, the instrument was designed and built by NASA engineers.

Air Force Major Robert Rushworth will be making his 17th flight in the X-15. His flight plan calls for altitudes of about 105,000 feet

MORE

and a maximum speed of approximately 3,900 miles per hour. He has previously flown the X-15 to flight maximums of 285,000 feet and 3,818 miles per hour.

The cross range indicator is expected to be capable of informing the pilot of any deviations from his desired course over the ground. The indicator receives its information from the inertial guidance system that is already installed on the X-15. Geographical coordinates of the launch point and the intended landing site are fed to the system prior to launch and the system requires no further information from the ground.

The flight will also study optical degradation, the effects of high speed flight on optics.

The X-15 will be air launched near Delamar Lake, Nevada, about 60 miles northwest of Las Vegas. The 225 mile trip should last about 11 minutes.

X-15 flight 1-42-61 is scheduled for Tuesday, December 3. The following is a data sheet for that flight...

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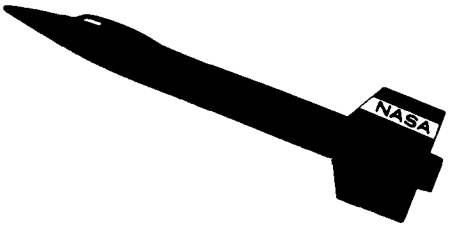

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	97 (42 for X-15 number 1)
PILOT:	Major Robert Rushworth, USAF
NASA 1:	Jack McKay, NASA
B-52 TAKE-OFF:	0900 3 December 1963
X-15 LAUNCH:	1000 3 December 1963
LAUNCH AREA:	Delamar Lake, Nevada
FLIGHT DISTANCE:	225 miles
PROGRAMMED MAXIMUM SPEED:	3,900 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 105,000 feet
PROGRAMMED ENGINE BURN TIME:	78 seconds
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corp.

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE
6 December 1963
37-63

FOR RELEASE: 12 December 1963

X-15 PILOT TO SPEAK AT ST. LOUIS WRIGHT BROTHERS DINNER

Milton O. Thompson, research pilot for the National Aeronautics and Space Administration's Flight Research Center at Edwards, California, will address the members of the St. Louis Aero Club at their annual Kitty Hawk dinner. This year's dinner will celebrate the 60th anniversary of the flight of the Wright brothers in 1903. The dinner will be held at the Le Chateau on December 15.

MORE

The only civilian pilot selected for the USAF's X-20 Dyna Soar, Thompson is currently assigned as a member of the X-15 pilot team. He has made several flights in the rocket-powered aircraft that already holds the world unofficial speed and altitude records for manned winged vehicles.

Thompson was also the first man to pilot two unique vehicles that are undergoing flight test by NASA, the Paresev and the M-2. The Paresev is a powerless paraglider that is being used to evaluate the flex-wing concept for possible use in the recovery of space vehicles and rocket boosters. The M-2 is a wingless lifting body that is under study for possible use as a future space vehicle that is capable of landing on earth under pilot control.

The Aero Club of St. Louis is a chapter of the National Aeronautic Association. Paul Rodgers, Vice President of Ozark Airlines, will act as master of ceremonies for the dinner.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE
7 January 1964
1-64

FOR RELEASE: IMMEDIATELY

MEMORANDUM TO EDITORS

Chief X-15 pilot Joseph A. Walker of the National Aeronautics and Space Administration's Flight Research Center will address the members of the San Diego section of the Society of Automotive

MORE

Engineers on January 14, 1964. The dinner meeting will be held at the Kings Inn.

Mr. Walker currently holds the world's unofficial speed and altitude records for manned winged vehicles. He flew the rocket powered X-15 to a speed of 4,104 miles per hour on June 27, 1962, and to an altitude of 354,200 feet on August 22, 1963.

Attached is a current biography of Mr. Walker and some information on the X-15 for your use.

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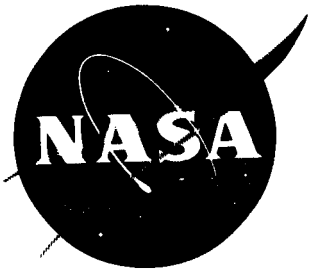

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

ENGLE TO MAKE THIRD FLIGHT IN X-15 TO ANALYZE AIRCRAFT STABILITY

Captain Joe H. Engle will make his third X-15 flight with the rocket engine operating at full power while conducting his own analysis of the X-15's stability. This flight, scheduled for January 8th, will be the first time that the 31 year old pilot has flown the research aircraft with its rocket engine, rated at 60,000 pounds of thrust for this flight, operating at 100% power for the entire powered portion of the flight. His top

MORE

speed will reach approximately 3600 m.p.h., and will be Engle's first flight at speeds in excess of five times the speed of sound.

The main purpose of the flight will be to familiarize the pilot with the effects of the stability augmentation systems on the aircraft stability. Engle will fly using first the stability augmentation system (SAS), then the alternate stability augmentation system (ASAS), and then he will intentionally turn off both systems and evaluate the basic, unaugmented, stability of the X-15. Engle will perform several minor control maneuvers to assist him in his evaluation that will take place during an actual, however mild, reentry from his peak altitude of about 130,000 feet.

Both the SAS and the ASAS, as regulated by the pilot, automatically dampen the small motions that are inherent to the X-15. By turning off the two systems, he will experience these motions first hand and provide his own control for them.

The X-15 will be air launched from a B-52 near Mud Lake, Nevada. The 215 mile trip to Edwards should last about 10 minutes.

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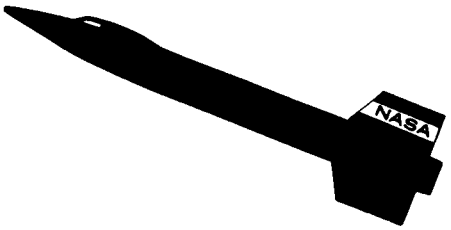

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	98 (43 for X-15 number 1)
PILOT:	Captain Joe H. Engle, USAF
NASA 1:	John B. McKay, NASA
B-52 TAKE OFF:	0900 8 January 1964
X-15 LAUNCH:	1000 8 January 1964
LAUNCH AREA:	Mud Lake, Nevada
FLIGHT DISTANCE:	215 miles
PROGRAMMED MAXIMUM SPEED:	3,600 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	130,000 feet
PROGRAMMED ENGINE BURN TIME:	74 seconds
PROGRAMMED ENGINE THRUST:	60,000 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT:	Unassigned
LAUNCH PANEL:	Jack Russell
CHASE PILOTS:	Unassigned
PRIME CONTRACTOR (AIR FRAME):	North American Aviation
PRIME CONTRACTOR (POWER PLANT):	Thiokol Chemical Corporation

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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X-15 FLIGHT WILL STUDY HEAT TRANSFER RATES

NASA research pilot Milton O. Thompson is scheduled to fly the X-15 number 3 on January 16 in the second of a current series of flights to investigate heat transfer rates with a sharp leading edged vertical tail. He will also perform several stability maneuvers.

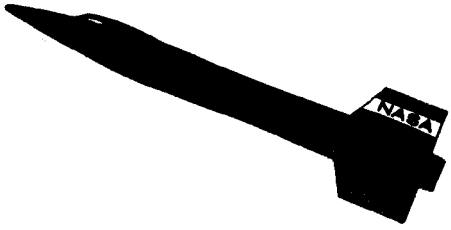
The number 3 X-15 has a sharp leading edge on the top portion of the vertical tail, 1/100 inch radius as compared to the previous blunt edge of 1/2 inch radius. This change was designed to reduce the complexity of the air flow around the tail surfaces of the aircraft. This change will cause a difference in the heat transfer rates.

MORE

Thompson will also intentionally turn off the yaw and roll dampers and perform several control maneuvers to evaluate aircraft stability.

The X-15 will be air launched from a B-52 near Hidden Hills, a dry lake bed near the Nevada-California state line. Thompson attempting to maintain a stabilized speed condition, will reduce his power setting to approximately 40% and use speed brakes. Flight maximums are scheduled to be a speed of approximately 3,150 m.p.h., and a peak altitude of about 72,000 feet. The 125 mile flight should take about 9 minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	99 (25 for X-15 number 3)
PILOT:	Milton O. Thompson, NASA
NASA 1:	Jack McKay, NASA
B-52 TAKE-OFF:	0900 16 January 1964
X-15 LAUNCH:	1000 16 January 1964
LAUNCH AREA:	Hidden Hills, Calif.
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	3,150 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 72,000 feet
PROGRAMMED ENGINE TIME:	104 seconds
PROGRAMMED ENGINE THRUST:	59,300 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (AIR FRAME):	North American Aviation, Inc.
PRIME CONTRACTOR (POWER PLANT):	Thiokol Chemical Corp.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

X-15 TO CONDUCT STABILITY TESTS USING UPPER SPEED BRAKES ONLY

The 100th flight of the X-15 will evaluate aircraft stability utilizing the upper speed brakes only. Major Robert A. Rushworth will be the pilot. The flight plan calls for a maximum speed of approximately 3,750 miles per hour and a peak altitude of about 102,000 feet.

Scientific experiments may be installed on the lower vertical tail on future X-15 flights that would necessitate that the lower speed brakes not be used.

MORE

There are two sets of speed brakes on the X-15, one set on the upper vertical tail and the other set on the lower vertical tail. On all previous flights, both sets of speed brakes have worked as one single unit. A mechanical change now allows the pilot to select either set of speed brakes or both sets together.

Major Rushworth will extend and retract the speed brakes several times during the flight. Each of these will be done at a different angle of attack and control maneuvers will be made to compare stability.

Ablative material will be mounted on the lower portion of the vertical tail of the X-15 to study the effects of heat disipation in preparation for use on the X-15 number two. This material absorbs the heat and then disipates it by charing.

The 10 minute flight will be launched near Mud Lake, Nevada, 215 miles north of Edwards.

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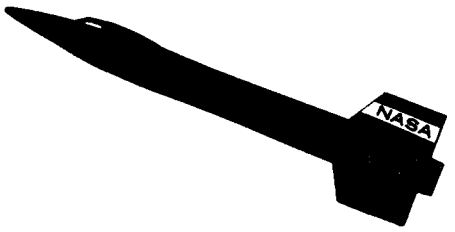

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	100 (44 for X-15 number 1)
PILOT:	Major Robert A. Rushworth, USAF
NASA 1:	John B. McKay, NASA
B-52 TAKE OFF:	0900 21 January 1964
X-15 LAUNCH:	1000 21 January 1964
LAUNCH AREA:	Mud Lake, Nevada
FLIGHT DISTANCE:	215 miles
PROGRAMMED MAXIMUM SPEED:	3,750 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	102,000 feet
PROGRAMMED ENGINE BURN TIME:	76 seconds
PROGRAMMED ENGINE THRUST:	60,700 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT:	Unassigned
LAUNCH PANEL:	Jack Russell
CHASE PILOTS:	Unassigned
PRIME CONTRACTOR (AIR FRAME):	North American Aviation
PRIME CONTRACTOR (POWER PLANT):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE
2-64
16 January 1964

FOR RELEASE: 20 January 1964 a. m.

X-15 TO MAKE 100TH FLIGHT IN RESEARCH PROGRAM

The next flight of the rocket-powered X-15 - the nation's first piloted reentry vehicle - will be its 100th in a research program that contributes to both aeronautical and space technology.

MORE

Initiated in advance of the space age, the X-15 program has been updated over the years to provide scientists with valuable inflight data for the development of advanced aircraft and future sub-orbital and space vehicle systems. It is a joint program of the National Aeronautics and Space Administration and the Department of Defense.

The X-15 program was initiated in December 1954 when a formal memorandum of understanding was signed by the National Advisory Committee for Aeronautics (NASA's predecessor), the U. S. Air Force, and the U. S. Navy. After studying various proposals, contracts were awarded to North American Aviation in December 1955 for the construction of three X-15 aircraft and in September 1956 to the Reaction Motors Division of Thiokol Chemical Corporation for the manufacture of the rocket engines.

The X-15 is the latest in a succession of research aircraft that are descendants of the X-1, first approved by the Congress in 1944. At the time that the X-15 program was formally adopted in 1954, the most advanced research aircraft in operation was the X-2, a plane designed to fly at three times the speed of sound and at an altitude of approximately 130,000 feet. The X-15 was designed to fly at six times the speed of sound and an altitude of 250,000 feet. It has met and exceeded these flight objectives many times.

MORE

The first X-15 flight, a planned glide flight, was made on June 8, 1959, by A. Scott Crossfield, North American test pilot. On September 17, 1959, Crossfield made the first powered flight, reaching a maximum speed of 1,393 miles per hour and a maximum altitude of 52,341 feet.

The X-15 research program was developed to provide information on aerodynamics, structures, flight control and the psychological aspects of high-speed, high-altitude flight. A follow-on program, announced in early 1962, is utilizing the aircraft as a test bed to carry scientific experiments beyond the earth's atmosphere on a repeated basis.

There are 17 currently approved experiments for the follow-on program and 10 more under consideration. In its test bed role, the X-15 will contribute to development of manned space flight systems and scientific satellites. The current proposed schedule calls for the X-15 flight research program to continue through 1968. This will include work in support of the National program to develop a supersonic commercial air transport.

Almost 1500 technical reports have been issued by the government agencies and the contractors on the technical results of the research program. These reports are distributed to government agencies, industry, educational facilities and other interested parties. Many oral

presentations concerning the technical and non-technical aspects of the program are delivered every year, both in this country and throughout the world.

"Perhaps, two of the most significant benefits gained from the X-15 research program are intangible," says Paul F. Bikle, Director of NASA's Flight Research Center. For example, he cited, the X-15 program has required that a sizeable segment of engineers and scientists from both government and industry have had to solve the problems involved with the design and construction of actual hardware, and then make it work. This alone has provided invaluable experience for future aeronautical and space efforts of this country.

The second intangible benefit of the X-15 program has been to show the capability of man to control vehicles of this type at extreme speeds both in and out of the earth's atmosphere. This experience will undoubtedly influence the design of future vehicles.

The X-15 currently holds the world unofficial records for speed and altitude in manned wing vehicles. It was flown to a speed of 4,104 miles per hour on June 27, 1962. It was also flown to a height of 354,200 feet on August 22, 1963. However, as X-15 pilot Joe Walker, the man who made these particular flights, says, "We're not in the business of setting records, we just happen to be working in the neighborhood where they are."

Approximately 220 million dollars has been spent on the X-15 program. Almost 150 million was paid to the two prime contractors, North American and Thiokol, for the engineering and construction of the aircraft and its rocket engines. Other industrial firms have received about eight million dollars for their efforts. Support and operational costs amount to approximately 15 million dollars per year.

Nine men have piloted the X-15. They are, in order of flight: A. Scott Crossfield, North American Aviation; Joseph A. Walker, NASA; Major Robert M. White, USAF; Cdr. Forrest S. Petersen, USN; John B. McKay, NASA; Major Robert A. Rushworth, USAF; Neil A. Armstrong, NASA; Captain Joe H. Engle, USAF; and Milton O. Thompson, NASA. Walker, McKay, Rushworth, Engle, and Thompson are still active members of the X-15 pilot-team. White and Rushworth received astronaut wings from the Air Force for their X-15 flights above 50 miles.

The first major modification to any of the three X-15's is now underway. The X-15 number two that was damaged in a landing accident in 1962 is being rebuilt with modifications that will increase the propellant capacity and offer an increased speed capability of almost eight times the speed of sound, Mach 8. This modification will not increase the aircrafts altitude capability. The aircraft may

be used as a test bed for inflight evaluation of ram-jet engines which require a speed of at least Mach 4 before they can be used. The X-15 is the only manned winged vehicle capable of hypersonic flight - above Mach 5.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE
3-64
24 January 1964

FOR RELEASE: Sunday
February 2, 1964

NASA ENGINEERS TO ADDRESS LOCAL EXPERIMENTAL AIRCRAFT ASSOCIATION MEETING

Two NASA engineers that are directly associated with the flight test program of the M-2 Lifting Body will address the Antelope Valley chapter of the Experimental Aircraft Association on February 5. Lifting Body program manager R. Dale Reed and project pilot Milton O. Thompson will speak at the evening meeting that will be held at Fox Airport.

MORE

The M-2 is a wingless flight vehicle that is undergoing flight tests at NASA's Flight Research Center at Edwards. It is a member of the lifting body class of vehicles that are under study by NASA for possible use as space vehicles of the future. The M-2 is the first actual flying vehicle of this type.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

X-15 FLIGHT TO STUDY HEAT TRANSFER RATES AND NOISE LEVEL

NASA research pilot Milton Thompson is scheduled to fly the X-15 number three on February 19 in the third of a current series of X-15 flights that are designed to study heat transfer rates with a sharp leading edged vertical tail. The aircraft will also carry equipment to measure boundary layer noise levels.

MORE

The number three X-15 has a sharp leading edge on the top portion of the vertical tail that alters the airflow over the tail surfaces. This airflow change will also influence the heat transfer rates. This flight will differ from the earlier two flight in the series as it will be flown at a higher airspeed, approximately 3,450 m.p.h.

A panel of the skin on the X-15, located on the right side of the fuselage in front of the wing, is instrumented with a microphone that will record the noise level of the turbulent air that flows over the surfaces of the X-15. This noise level is then measured and plotted on graphs by NASA engineers.

Measurements of noise level, coupled with measurements of panel movement that are obtained by the use of strain gauges, are used to predict possible structural fatigue of the panel. This information, the only high speed flight data available outside of wind tunnel studies, will provide a foundation for possible use in the planned supersonic transport program.

The X-15 will be air-launched from a B-52 near Hidden Hills, California. An approximate 20 degree turn to the left will be made during the flight and a return to course will follow. Peak altitude will be about 75,000 feet. The 125 mile trip should last about 9 minutes.

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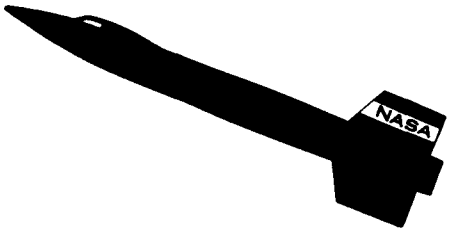


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	101 (26 for X-15 number 3)
PILOT:	Milton O. Thompson, NASA
NASA 1:	Jack McKay, NASA
B-52 TAKE-OFF:	0900 19 February 1964
X-15 LAUNCH:	1000 19 February 1964
LAUNCH AREA:	Hidden Hills, California
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	3,450 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 75,000 feet
PROGRAMMED ENGINE BURN TIME:	93 seconds
PROGRAM ENGINE THRUST:	60,200 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE
24 February 1964
4-64

FOR RELEASE: Immediately

X-15 FLIGHT TEST PROGRAM RECEIVES HIGH NASA AWARD

The National Aeronautics and Space Administration presented one of its highest honors -- the Group Achievement Award -- to the X-15 Flight Test Program in ceremonies held today at NASA's Flight Research Center at Edwards Air Force Base, California. The award, presented by NASA's

MORE

Deputy Administrator Dr. Hugh L. Dryden, was accepted jointly by Paul F. Bikle, Director of NASA's Flight Research Center, and Brig. General Irving L. Branch, Commander of the Air Force Flight Test Center.

The award, signed by James E. Webb, NASA Administrator, was presented "for outstanding accomplishments during the X-15 flight research program from its first flight on June 8, 1959, to the one-hundredth flight on January 28, 1964."

Dr. Dryden also presented two individual awards to X-15 Program Manager James E. Love and Joseph R Vensel, Chief of X-15 Flight Operations, for their outstanding leadership and direction of the X-15 Flight Test Program.

Eighteen men from NASA and the Air Force were selected as being representative of the many people involved in the X-15 Flight Test Program and received awards from Mr. Bikle and General Branch. They included William P. Albrecht, Robert L. Allen, Charles N. Baker, Lorenzo C. Barnett, S/Sgt. Bruce C. Byington, Merle F. Curtis, Joseph Darr, Jr., Paschal H. Dorr, T/Sgt. Jimmy G. Foreman, James D. Hankins, Charles W. Littleton, S/Sgt. Lawrence A. Maharrey, John T. McTigue, John W. Russell, S/Sgt. Gerald G. Sube, A/1c Glenn G Vallance, Ronald S. Waite and Francis M. Woolley.

MORE

A special presentation of the NASA Outstanding Leadership Award was made to Mr. De E. Beeler, Associate Director for the NASA's Flight Research Center, by Dr. Dryden. Mr. Beeler was recognized "for his leadership in the successful conduct of flight research activities associated with the research airplane program fromthe X-1 through the X-15." The award was also signed by Mr. Webb.

Attending the ceremonies were many people associated with the X-15 program, including all of the five pilots still engaged in flying the rocket-powered aircraft, Captain Joe H. Engle, John B. McKay, Major Robert A. Rushworth, Milton O. Thompson and Joseph A. Walker; Neil A. Armstrong, former X-15 pilot, and now attached to NASA's Gemini program; Mr. J. L. Atwood, Chairman of the Board of North American Aviation; Dr. E. H. Seymour, General Manager of the Reaction Motors Division of Thiokol Chemical Corporation; and Lt. General James Ferguson, Air Force representative to the Research Airplane Committee.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

103rd X-15 FLIGHT SCHEDULED FOR MARCH 17

The Number One X-15 is scheduled to fly on March 17th with Air Force Astronaut Robert A. Rushworth as the pilot. The purpose of the flight is to study the optical degradation resulting from the boundary layer and shock waves of the X-15.

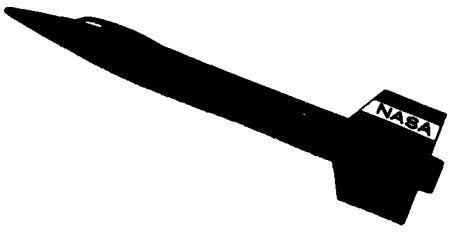
MORE

Even though Rushworth will use his speed brakes, his flight profile calls for a maximum speed of approximately 3900 m.p.h. This should occur at about the same time he shuts down the rocket engine, about 81 seconds after launch. Peak altitude should be approximately 103,000 feet.

Boundary layer air is the thin layer of air that flows in between the surfaces of the airplane and the free stream of the air. The thickness of the boundary layer of air increases as it passes from the nose back towards the tail of the aircraft. The velocity of this air layer, zero at the plane's surface, increases with distance from the airplane's surface, until it approaches the velocity of the free stream.

The X-15 will be air-launched from a B-52 aircraft near Delamar Lake, Nevada. The 240 mile trip should take about 11 minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	103 (45 for X-15 number 1)
PILOT:	Maj. Robert A. Rushworth, USAF
NASA 1:	Milton Thompson, NASA
B-52 TAKE-OFF:	0900 17 March 1964
X-15 LAUNCH:	1000 17 March 1964
LAUNCH AREA:	Delamar, Nevada
FLIGHT DISTANCE:	240 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3,900 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 103,000 feet
PROGRAMMED ENGINE BURN TIME:	Approximately 81 seconds
PROGRAMMED ENGINE THRUST:	59,300 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

ENGLE SLATED FOR 35 MILE HIGH FLIGHT IN X-15

Captain Joe Engle is scheduled to fly the X-15 number one on April 8 to an approximate peak altitude of 180,000 feet - almost 35 miles high. The flight will serve as an altitude build-up for the 31 year old pilot in preparation for piloting future comparatively high altitude flights in the

MORE

X-15.

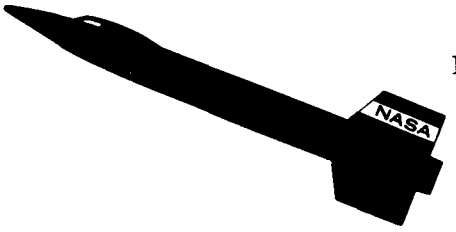
Future plans in the X-15 research program involve flights that will carry scientific experiments to the 200,000 to 250,000 foot range. The number on X-15 will be configured with a special detachable wing tip pod to carry these experiments.

Captain Engle has already made three flights in the X-15. His previous flight maximums include an altitude high of 139,000 feet and a speed of 3716 m.p.h.

The flight will also conduct optical degradation studies.

The flight will be air launched from Delamar Lake, Nevada. The 240 mile flight should last about 10 minutes and reach a maximum of almost 3600 m.p.h.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	104 (46 for X-15 number 1)
PILOT:	Captain Joe H. Engle
NASA 1:	Major Robert Rostworth
B-52 TAKE-OFF:	0900 8 April 1964
X-15 LAUNCH:	1000 8 April 1964
LAUNCH AREA:	Delamar, Nevada
FLIGHT DISTANCE:	240 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3,600 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 180,000 feet
PROGRAMMED ENGINE BURN TIME:	Approximately 81 seconds
PROGRAMMED ENGINE THRUST:	58,500 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (AIR FRAME):	North American Aviation, Inc.
PRIME CONTRACTOR (POWER PLANT):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 5-64
13 April 1964

FOR RELEASE: Wednesday
15 April 1964

NASA ACCEPTS DELIVERY OF LUNAR LANDING RESEARCH VEHICLES

The first of two manned vehicles that will be used to explore some of the problems involved with landing a man on the surface of the moon was formally accepted today by the National Aeronautics and Space Administration's Flight Research Center at Edwards, California. Bell Aerosystems

MORE

Company, the builder of the two vehicles, will deliver the second vehicle in the near future.

Called the Lunar Landing Research Vehicle (LLRV), the four-legged craft will be used in an extensive flight research program conducted by the NASA's Flight Research Center in support of Project Apollo which is under the general direction of NASA's Manned Spacecraft Center, Houston, Texas. The program will investigate possible operational and piloting problems that may be incurred during the final phase of a manned lunar landing and the initial phase of a lunar take-off.

The LLRV is slightly more than 10 feet high and is supported by four aluminum alloy truss legs having a spread of 13 feet, four inches. A General Electric CF 700 turbofan engine is attached to a gimbaling system at the apex of the four legs. A plexiglass covered pilot's platform extends forward from the top of the vehicle. The LLRV, complete with instrumentation, fuel, and pilot, weighs about 3,600 lbs.

Since the gravitational force on the moon is only one-sixth of that found on earth, the jet engine is gimbaled so as to always remain in a vertical position and the engine thrust is automatically regulated to counterbalance five-sixths of the LLRV's weight. This presents the research pilot with almost the same acceleration forces that will be

encountered on the moon. The jet engine will also be utilized to provide take-off power.

Two 500-pound rocket motors are installed on the main frame of the vehicle that will be used to provide lift for the LLRV. These rockets are pilot-controlled and can be regulated to provide from 100 to 500 lbs. of thrust. Six additional lift rockets are provided for emergency use. Two sets of eight reaction control rockets, which are pilot controlled, are capable of producing 18 to 90 lbs. of thrust each and are used in pairs to control the attitude of the vehicle during the horizontal manuevering phase of the landing.

The LLRV employs several safety systems. In the event of jet engine failure, a 24-foot parachute would slow the rate of descent of the LLRV until the six additional lift rockets could be used to land the vehicle. In the event of the possible malfunction of the lift rocket system, the jet engine is capable of providing sufficient lift to land the vehicle. An operationally-accepted Weber ejection seat that is capable of pilot ejection at zero speed and ground level is also installed on the vehicle.

The NASA's Flight Research Center will provide the instrumentation for the two vehicles. Flight testing is expected later this year.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 6-64
16 April 1964

FOR RELEASE: IMMEDIATELY

NASA research pilot Milt Thompson briefs Asa T. Briley, Director of the San Francisco Region of the US Civil Service, on the experimental Paresev that is being flight tested at NASA's Flight Research Center at Edwards, California. Thompson, who is also assigned as a pilot in the rocket-powered X-15 research program, briefed the Civil Service executive, whose region includes all of California and Nevada plus most of the Pacific Islands, on several of the programs that are being conducted at the NASA center. All of the NASA personnel are members of the federal civil service.

-30-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

RUSHWORTH TO PILOT 105TH X-15 FLIGHT

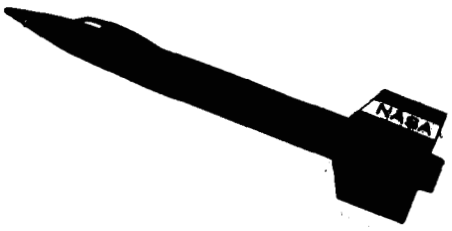
Air Force Astronaut Robert A. Rushworth will pilot the X-15 on its 105th flight that is scheduled for Tuesday, April 27. The purpose of the flight is another in the current series of X-15 flights that are studying optical degredation, the effects of high speed flight on optical

MORE

systems.

The X-15 will be air launched from a B-52 near Delamar Lake, Nevada, about 60 miles north of Las Vegas, Nevada. The rocket engine, rated at 58,500 lbs. of thrust for this flight, is scheduled to burn for about 84 seconds which should propell the X-15 to a maximum speed of approximately 3900 m.p.h. Peak altitude will be about 102,000 feet. The 240 mile flight should take about 11 minutes.

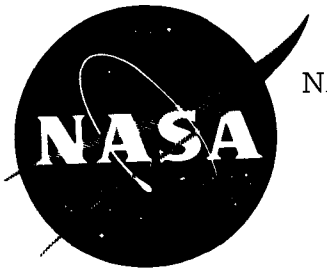
END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	105 (47 for X-15 number 1)
PILOT:	Major Robert A. Rushworth, USAF
NASA 1:	Captain Joe Engle, USAF
B-52 TAKE-OFF:	0900 ~~28~~ 29 April 1964
X-15 LAUNCH:	1000 ~~28~~ 29 April 1964
LAUNCH AREA:	Delamar, Nevada
FLIGHT DISTANCE:	240 miles
PROGRAMMED MAXIMUM SPEED:	3,900 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 102,000
PROGRAMMED ENGINE BURN TIME:	Approximately 84 seconds
PROGRAMMED ENGINE THRUST:	58,500 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

MCKAY TO MAKE X-15 AERODYNAMIC FLIGHT

NASA research pilot Jack McKay is scheduled to make the 106th flight in the joint NASA-USAF-USN X-15 research program on May 6. The flight will be the latest in the current series of flights being made with the X-15 number three to secure aerodynamic data, particularly

MORE

boundary layer noise measurements, and skin friction measurements. These flights are made at different airspeeds and altitudes in order that NASA engineers may obtain the desired data at different stabilized flight conditions.

McKay's flight is intended to collect data in the speed range from 2500 to 2750 m.p.h. at altitudes around 68,000 feet. His planned maximum speed will be about 2750 m.p.h. and his maximum altitude will be approximately 69,000. Maximum skin temperatures should not exceed 800 degrees (F).

The number three X-15 is configured with a sharp leading edge on the top portion of the veritcal tail that alters the airflow over the tail surfaces. Special sensors mounted on the tail of the aircraft measure the effects of this altered airflow on the skin friction and heat transfer rates.

The number three X-15 also has a special microphone mounted on the side of the aircraft. This device measures the noise level of the boundary layer of air that flows over the surfaces of the aircraft. Noise level, coupled with other measurements, is used as a basis for the prediction of possible structural fatigue.

The X-15 will be air-launched from a B-52 aircraft near Hidden Hills, California. The 125 mile trip should last about 9 minutes.

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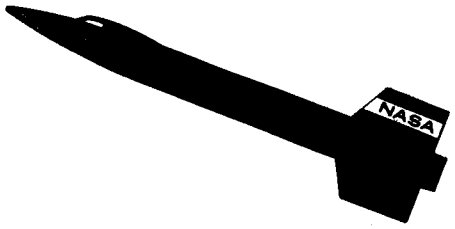


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	106 (28 for X-15 number 3)
PILOT:	Jack McKay, NASA
NASA 1:	Milt Thompson, NASA
B-52 TAKE-OFF:	0900 6 May 1964
X-15 LAUNCH:	1000 6 May 1964
LAUNCH AREA:	Hidden Hills, California
FLIGHT DISTANCT:	125 miles
PROGRAMMED MAXIMUM SPEED:	2,750 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 69,000 feet
PROGRAMMED ENGINE BURN TIME:	Approximately 110 seconds
PROGRAMMED ENGINE THRUST:	59,200 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 10-64
7 May 1964

FOR RELEASE: IMMEDIATELY

MEMORANDUM TO EDITORS

Mr. James Love, project manager of the X-15 program for the National Aeronautics and Space Administration's Flight Research Center, Edwards, California will address the Greater Los Angeles Metropolitan Transportation Organization on Wednesday, May 13 at the Beverly Wilshire Hotel. The evening meeting will be the highlight of the Los Angeles participation in National Transportation Week, May 10 - May 16.

The rocket powered X-15 is being used to conduct aeronautical research with flights in near space. It currently holds the world's unofficial world speed and altitude records for manned winged vehicles with flights to a speed of 4,104 miles per hour and to an altitude of 354,200 feet.

As project manager, Mr. Love is responsible for the planning and execution of the X-15 flight program. A biography is attached for your use.

-30-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
BOX 273, EDWARDS, CALIFORNIA 93523
CLIFFORD 8-3311 TWX: 805-281-5055

IN REPLY REFER TO:

NEWS RELEASE 11-64
8 May 1964

FOR RELEASE: IMMEDIATELY

MEMORANDUM TO EDITORS

Mr. John B. McKay, a research pilot for the National Aeronautics and Space Administration's Flight Research Center who is currently assigned to the X-15 flight program, will address the Annual Appreciation Dinner of the Antelope Valley District Boy Scouts on Tuesday, May 12. The dinner meeting will be held at the Antelope Valley High School.

Mr. McKay, who lives in Lancaster with his wife and family, is a veteran test pilot who has specialized in high speed flight research. Besides the X-15, which he has piloted over five times the speed of sound, Mr. McKay has flown such experimental aircraft as the D-558, the X-1, and the X-5. An engineer as well as a pilot, he is the author of several technical reports.

The Scout dinner is held every year to express appreciation to the local adults who volunteer their time and efforts in providing leadership for the Scouting movement.

The new officers for the forthcoming year will also be installed at the meeting by Mr. Paul E. Palmer, President of the San Fernando Council of Boy Scouts of America.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

X-15 SCHEDULED FOR 38 MILE HIGH FLIGHT

The X-15 number one is scheduled to fly on May 19 with Captain Joe Engle as the pilot. The flight is programmed to reach a peak altitude of approximately 200,000 feet, about 38 miles high, and will serve as an altitude build-up for Captain Engle. Future X-15 flight

MORE

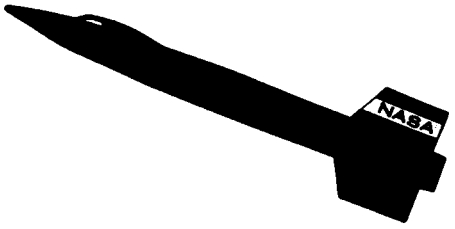
requirements include a series of flights in the 200,000 to 250,000 feet range.

The flight will also conduct optical degredation studies.

The flight profile calls for the X-15 to be air-launched from a B-52 near Delamar Lake, Nevada, 240 miles of Rogers Dry Lake, and to climb at an angle of approximately 30 degrees. The rocket engine will be shut down by the pilot at approximately 3500 miles per hour, and about 81 seconds after launch. This should be the maximum velocity for this flight. Peak altitude should be reached about 156 seconds after launch.

The re-entry portion of the flight will be accomplished with a planned angle of attack of approximately 20 degrees. Maximum acceleration will be about 4.0 and temperatures should not exceed 800 degrees (F). The flight should last about 10 minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	107 (48 for X-15 number 1)
PILOT:	Captain Joe Engle, USAF
NASA 1:	Major Robert A. Rushworth, USAF
B-52 TAKE-OFF:	0900 19 May 1964
X-15 LAUNCH:	1000 19 May 1964
LAUNCH AREA:	Delamar, Nevada
FLIGHT DISTANCE:	240 miles
PROGRAMMED MAXIMUM SPEED:	3,500 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 200,000
PROGRAMMED ENGINE BURN TIME:	Approximately 81 seconds
PROGRAMMED ENGINE THRUST:	58,500 lbs.
SUPPORT PERSONNEL:	
B-52 Pilot	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassinged
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

RELATIVELY LOW AND SLOW FLIGHT FOR X-15 PLANNED

The X-15 is scheduled to fly on May 21 with NASA research pilot Milton Thompson as the pilot. The flight profile calls for speeds and altitudes much lower than the normal X-15 flights - speeds and altitudes similar to those planned for the proposed supersonic transport.

MORE

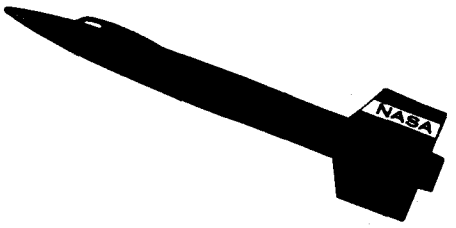
The purpose of the flight is to measure the effects of the air flow over the X-15 in relation to heat transfer rates, skin friction, and boundary layer noise. Data obtained from these measurements will be used for various aeronautical programs including the supersonic transport.

Approximately 40 seconds after launch, NASA pilot Thompson will have climbed the X-15 to an altitude of about 55,000 feet and a speed of about 1900 miles per hour. He will then reduce to a minimum power setting and modulate his speed brakes to maintain a slow acceleration. For the rest of the flight, he will slowly climb the X-15 to its peak altitude of about 66,000 feet and maximum speed of approximately 2300 mph.

Approximately 98 seconds after launch, Thompson will roll the aircraft into a 60 degree left wing turn to the left and increase his angle of attack to 7 degrees. This bank will result in a left turn of about 20 degrees and will allow him to maintain his angle of attack setting without causing the X-15 to climb.

The X-15 will be air launched from a B-52 near Silver Lake, California, about 125 miles northeast of Rogers Dry Lake. The flight should last about eight minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	108 (29 for X-15 number 3)
PILOT:	Milton O. Thompson, NASA
NASA 1:	Jack McKay, NASA
B-52 TAKE-OFF:	0900 21 May 1964
X-15 LAUNCH:	1000 21 May 1964
LAUNCH AREA:	Silver Lake, California
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	2,300 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 66,000 feet
PROGRAMMED ENGINE BURN TIME:	120 seconds
PROGRAMMED ENGINE THRUST:	59,200 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassinged
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Air Frame):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 13-64
28 May 1964

FOR RELEASE: Monday A. M.
1 June 1964

NASA AWARDS A 1.2 MILLION DOLLAR CONTRACT FOR A FLYING LABORATORY

A 1.2 million dollar contract for the design, development, and construction of a new simulator system that will be installed in a subsonic jet transport has been awarded to the Cornell Laboratories, Inc., Buffalo, New York. The new system, called the General Purpose

MORE

Airborne Simulator (GPAS), was purchased by the National Aeronautics and Space Administration's Flight Research Center, Edwards, California and will be used to provide airborne simulation of advanced aircraft with particular emphasis on the proposed supersonic transport.

A Lockheed Jetstar, capable of flight at speeds in excess of 550 m.p.h. at altitudes up to 40,000 feet, was purchased by the Flight Research Center expressly for use with the new system. The flying laboratory, which will have its interior modified for installation of the simulation equipment, will normally carry a crew of test pilot, safety pilot and flight test engineer.

The GPAS will consist of an airborne analog computer, and related electronic systems that will allow the test pilot flying the simulator to experience the flight characteristics of the simulated vehicle. The airborne simulator will have the advantage over ground based simulators in that it will provide motion and visual cues to the pilot while he is in the actual flight environment. An airborne data acquisition system will also be carried for ground analysis of the flight data.

The new system will allow the in-flight evaluation of specific configurations for a wide variety of flight conditions of speed, altitude and attitude. In addition to the general handling qualities, the GPAS

will allow NASA engineers and pilots to evaluate and develop in-flight criteria for these advanced design concepts.

The GPAS will also be used to evaluate new flight instruments, pilot displays and flight controls. It will also be available for pilot training and transition for advanced type aircraft.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

X-15 TO CARRY HORIZON SCANNING DEVICE

Captain Joe Engle is scheduled to fly the number three X-15 on July 2. The purpose of the flight is to carry a horizon scanner and to conduct a pilot check-out of the adaptive control system.

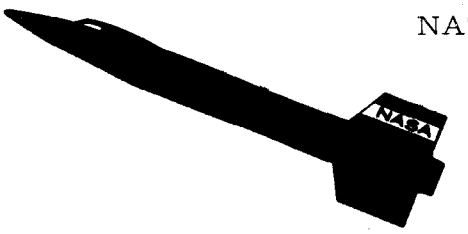
The horizon scanner is installed in a special container mounted on the rear of the X-15. The scanner is a project of NASA's Langley Research Center and is used to study the infra-red definition of the earth's horizon for use as a possible navigational aid for use by future spacecraft. The scanner utilizes a mirror arrangement and a photo sensitive cell to measure the intensity, size, and position of the near infra-red horizon of the earth.

MORE

This will be Captain Engle's first flight in the number three X-15 that is equipped with the adaptive control system. This control system has the ability to sense the atmospheric conditions that surround the X-15 and to then provide the pilot with the proper type and amount of control, either aerodynamic or ballistic.

The flight plan calls for the X-15 to be air launched from Delamar Lake, Nevada, 240 miles northeast of here. Planned flight maximums of a speed of approximately 3550 miles per hour and a peak altitude of about 180,000 feet. The flight should last approximately 10 minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	111 (30 for X-15 number 3)
PILOT:	Captain Joe Engle, USAF
NASA 1:	Major Robert Rushworth, USAF
B-52 TAKE-OFF:	0900 ~~3~~ 2 July 1964
X-15 LAUNCH:	1000 ~~3~~ 2 July 1964
LAUNCH AREA:	Delamar Lake, Nevada
FLIGHT DISTANCE:	240 Miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3550 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 180,000 feet
PROGRAMMED ENGINE BURN TIME:	77 seconds
PROGRAMMED ENGINE THRUST:	59,900 lbs.
SUPPORT PERSONNEL:	
B-53 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 14-64

FOR RELEASE: Tuesday Noon
2 June 1964

NASA AWARDS 1.2 MILLION DOLLAR CONTRACT TO NORTHROP FOR CONSTRUCTION OF TWO LIFTING BODY RESEARCH VEHICLES

The National Aeronautics and Space Administration's Flight Research Center, Edwards, California has awarded a 1.2 million dollar contract to the Norair Division of the Northrop Corporation, Hawthorne, California for the design and construction of two full scale lifting body research vehicles

MORE

The contract calls for the construction of two different lifting body designs, the M-2 and HL-10.

The two research vehicles will be used initially by NASA for full-scale wind tunnel testing at NASA's Ames Research Center, Moffett Field, California and for free flight tests as manned subsonic gliders at the Flight Research Center. The lifting body program is under study by NASA's Office of Advanced Research and Technology for possible use as a future re-entry vehicle that is capable of landing on earth under pilot control.

The flight test program will study the stability, controllability, and maneuverability of the two vehicles in the subsonic speed range and during the landing maneuver. They will be air-launched from a B-52 aircraft at an altitude of approximately 45,000 feet and at a speed of Mach .8, about 500 m.p.h. Powerless, the vehicles will glide back to a landing at about 200 m.p.h. on the dry lake bed. Flight testing will begin several months after acceptance of the vehicles by NASA.

The full scale M-2, a heavier version of the lightweight M-2 that is currently being flown by the Flight Research Center, will be wingless and half-conical in shape. It will be about 22 feet long, 9 feet wide, and weigh about 4000 lbs. empty. It will be configured with extendable tricycle landing gear.

The HL-10, a lifting body design of NASA's Langley Research Center, Hampton, Virginia, will be a wingless delta-shaped vehicle with control fins extending upward from the rear of the craft. The HL-10 will be about 21 feet long, approximately 12 feet wide, and weigh about 4000 lbs. empty It will also utilize extendable tricycle landing gear.

The M-2 will have a bubble type canopy and a portion of the nose structure will be constructed of transparent material for forward visibility during landing. The HL-10's cockpit will be internal and covered by a transparent material. It will also utilize a transparent forward section

Under the terms of the contract, Norair will deliver the first vehicle, the M-2, in the spring of 1965 and the second vehicle, the HL-10, six months later.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 15-64
5 June 1964

FOR RELEASE: Thursday A.M.
11 June 1964

NUMBER TWO X-15 TO RETURN TO FLIGHT STATUS

Engineers at NASA's Flight Research Center have scheduled two flights for the recently modified X-15 number two. The first flight, scheduled for June 11, will be a captive flight - the X-15 will remain attached to the B-52 carrier aircraft - and will be

MORE

used as an airborn check-out of the aircraft systems. The second flight, a free flight, will follow the next day provided a satisfactory check-out is obtained on the captive flight. Neither of the two flights will carry the external propellant tanks that were part of the added modifications.

The X-15 number two was repaired and modified following a landing accident that occurred in November 1962. After the repair and modification work was completed by North American Aviation, the aircraft was delivered to the Flight Research Center in February 1964. Since then, the aircraft and its various systems have undergone flight requalification tests and functional ground check-outs.

Air Force Astronaut Robert A. Rushworth will be the pilot for both of the flights. NASA research pilot John B. McKay has been assigned as ground controller for both flights.

The captive flight will follow a normal flight plan until 10 seconds from drop when the launch procedure will be stopped. Following this, the normal alternate plan for no launch will be used that calls for the X-15 to jettison its propellants and for the B-52 to land with the X-15 still attached to its wing. However on

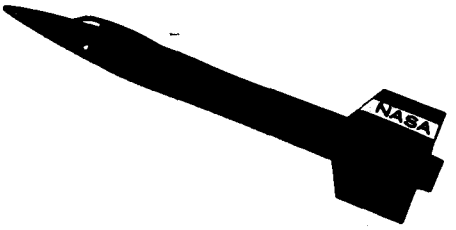
this flight, at an altitude of approximately 10,000 feet, the captive X-15 will extend its landing gear to ensure proper operation. The B-52 flight path will be a race track pattern in the local area.

The second flight will be an air launch that will evaluate the aircraft and its systems at relatively low X-15 altitudes of about 80,000 feet and moderate airspeeds of approximately 3000 mph. At different times during the eight minute flight that will originate near Hidden Hills, California, Rushworth will turn off various automatic systems and evaluate the basic aircraft stability.

The next flight of the X-15 number two will evaluate the aircraft and its stability at faster speeds and higher altitudes.

The first planned scientific missions of the number two X-15 involve one of the new modifications, four astronomical cameras that will be mounted on the top portion of the fuselage. As the aircraft escapes beyond the ozone layer of the earth's atmosphere, a chemical layer that acts as a photographic filter, clam shell doors will open and allow the cameras to take unfiltered pictures of the stars. These flights are expected to be scheduled in the near future.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	110 (32 for X-15 number 2)
PILOT:	Major Robert A. Rushworth, USAF
NASA 1:	John B. McKay, NASA
B-52 TAKE-OFF:	0900 12 June 1964
X-15 LAUNCH:	1000 12 June 1964
LAUNCH AREA:	Hidden Hills, California
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3000 mph
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 80,000 feet
PROGRAMMED ENGINE BURN TIME:	Approximately 83 seconds
PROGRAMMED ENGINE THRUST:	60,000 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 16-64
24 June 1964

FOR RELEASE: IMMEDIATELY

TWO NASA TECHNICIANS' INVENTION SAVES GOVERNMENT OVER $150,000

Two technicians at the National Aeronautics and Space Administration's Flight Research Center, whose invention resulted in an estimated savings of $150,700 to the government last year, received an incentive award from Mr. De Beeler, Associate Director of the NASA facility at Edwards, California. The two men, Mr. John E. Reeves and Mr. Joseph Darr, split a total cash award of $1,205.

The two men designed and constructed a portable check-out cart that is used to troubleshoot for possible malfunctions in the YLR-99 rocket engine of the X-15. The unique invention is capable of determining if there is a malfunction and identifying it without removing the engine from the aircraft or conducting a separate ground engine run.

Besides the money saved by the use of the new system, it has been estimated that a savings of at least 500 man-hours per year would be realized.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

MCKAY SCHEDULED TO FLY X-15 ON 35 MILE HIGH FLIGHT

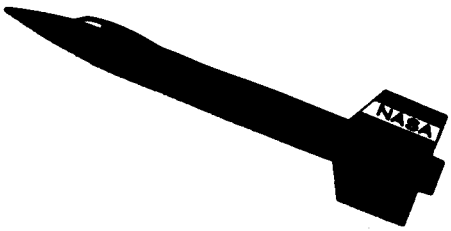
NASA research pilot Jack McKay is scheduled to fly the number one X-15 on June 27. The flight is programmed to reach a peak altitude of approximately 182,000 feet, about 35 miles high, and will serve as an altitude build-up flight for pilot McKay. Future flights in the X-15 research program such as the star tracker series, flights that will photograph the stars from high altitudes, will include many flights in the 200,000 to 250,000 feet range.

The flight plan calls for the X-15 to be air-launched from a B-52 near Delamar Lake, Nevada, approximately 60 miles north of Las Vegas. McKay will use a maximum power setting on the rocket-engine and climb at an angle of approximately 28 degrees. As soon as he reaches a velocity of about 3550 mph, about 80 seconds after launch, he will shut down the rocket engine. His peak altitude should be reached about 142 seconds after launch.

MORE

The re-entry portion of the flight will be accomplished with a maximum angle of attack of about 20 degrees. The maximum acceleration forces are planned not to exceed 3 - 4 units and maximum temperature will be about 800 degrees (F). The 240 mile flight should last about 10 minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	110 (49 for X-15 number 1)
PILOT:	John B. McKay, NASA
NASA 1:	Major Robert Rushworth, USAF
B-52 TAKE-OFF:	0900 27 June 1964
X-15 LAUNCH:	1000 27 June 1964
LAUNCH AREA:	Delamar Lake, Nevada
FLIGHT DISTANCE:	240 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3550 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 182,000 feet
PROGRAMMED ENGINE BURN TIME:	80 seconds
PROGRAMMED ENGINE THRUST:	58,500 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 17-64
7 July 1964

FOR RELEASE: 12 July 1964

NASA TECHNICIAN TO ADDRESS SAN DIEGO GROUP

Roger J. Barnicki, commander of the five man crew that recently completed a 30 day simulated space trip, will address members of the San Diego chapter of the Space and Flight Equipment Association on July 15. The dinner meeting will be held at Michael's Restaurant in Lemon Grove.

The experiment isolated the five men in a special chamber for 30 days under simulated conditions that could be encountered under an actual space trip of the same duration. The men lived on several types of typical space diets, including the diet proposed for the two-man Gemini vehicle, and a water-regeneration system. The program tested the various life support systems and evaluated the effects on the men.

The program was conducted by the Boeing Company of Seattle, Washington under direction of the National Aeronautics and Space Administration.

Barnicki, a volunteer for the experiment, is a pilot equipment specialist for the rocket-powered X-15 at NASA's Flight Research Center, Edwards, California.

A biography is enclosed for your use.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 18-64
13 July 1964

FOR RELEASE: Wednesday A.M.
15 July 1964

Astronaut Alan B. Shepard with three other astronauts from the National Aeronautics and Space Administration's Manned Spacecraft Center visited NASA's Flight Research Center last week where he received a briefing on the Lunar Landing Research Vehicle from project pilot Joe Walker. The research vehicle will be used by NASA to explore some of the problems involved with landing a man on the surface of the moon and is expected to make its first flights sometime later this year.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 19-64
23 July 1964

FOR RELEASE: 27 July 1964 a.m.
(Released simultaneously with NASA Headquarters)

NASA MODIFYING X-15 FOR HIGH ALTITUDE RESEARCH

The National Aeronautics and Space Administration is modifying the X-15 number 1 rocket powered airplane to carry on scientific experiments outside of the earth's atmosphere at heights above 100,000 feet. The modifications are being installed at NASA's Flight Research Center and are expected to be completed by September 15.

The modifications include the installation of a new inertial guidance system and the installation of several compartments that will house various scientific experiments. Equipment in these compartments will be used to measure the intensity and spectral distortion of

MOR E

sky-light, to collect micrometeorites, and to measure the resolution of the earth's horizon. This equipment will be contained in two streamlined cylindrical compartments, almost five feet long and weighing about 200 lbs. each, mounted on each wing tip of the X-15.

The new inertial guidance system was originally designed by the Honeywell Corporation for use in the X-20 Dynasoar and uses a digital computer as opposed to the analog computer in the present X-15 guidance system. Installed in the X-15, the system will provide the experiments with more accurate information concerning the altitude, speed, and attitude of the X-15 in flight. The system also has the capability of providing energy management information to the pilot for possible use in new systems.

The forward portion of the left wing tip pod will contain a device with six rotating faces of an adhesive type material that will be used to collect micrometeorites and extraterrestial dust. These particles will then be returned for ground analysis of their physical characteristics and chemical composition. This analysis will be used to ascertain the origin - earth or space - of the particles and to verify certain astronomical theories.

The rear portion of the left wing tip pod will contain a special spectrometer that will be used to measure the radiation characteristics and polarization of the total daytime sky background. This

data, ranging from the near ultraviolet to the near infrared, will be used as a primary factor in establishing the basic design criteria of star tracking components for future celestrial attitude reference systems.

The right wing tip pod will contain a densitron that will be used to measure the ambient density of air at high altitudes. Air, under ram pressure, will be ionized to produce electronic measurements. These measurements, coupled with the known velocity of the X-15, can be used to determine the ambient density for the particular altitude.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

ENGLE SCHEDULED FOR 112 X-15 FLIGHT

Captain Joe Engle is scheduled to fly the number three X-15 on July 28 in the 112th flight in the joint NASA-USAF-USN research program. The mission of the flight is to conduct local airflow measurements and to study heat transfer rates under different air flow conditions. The flight will also evaluate a different type of ablative material.

Engineers are interested in determining how much increase in the heat transfer rates will be caused by altering the air flow over the surfaces of the X-15. NASA engineers and technicians have installed four instrumented panels on the underside of the aircraft. Two of these panels are smooth and the other two have 1/4 inch steps that will alter the airflow in order that a comparison can be made.

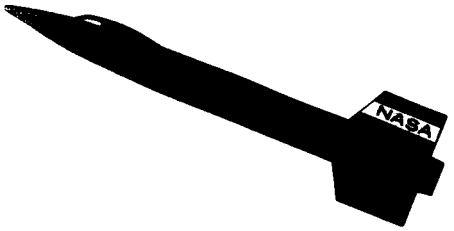
MORE

A silicone rubber based type of ablative material, developed by the General Electric Company, will be evaluated on the flight. The lower portion of the X-15's tail fin has been coated with this material. The coating is expected to reduce the temperature at this location from an approximate 800 or 900 degrees F. to about 350 or 400 degrees. Several types of ablative material are under study by NASA for use on the X-15.

Two special pressure measuring devices have been mounted on the front of the X-15 to measure local air flow.

The X-15 will be air launched near Hidden Hills, California, about 125 miles northeast of here. The planned nine minute flight should reach a peak altitude of approximately 78,000 feet and a maximum velocity of about 3400 m.p.h.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	112 (31 for X-15 number 3)
PILOT:	Captain Joe Engle, USAF
NASA 1:	Major Robert Rushworth, USAF
B-52 TAKE-OFF:	0900 28 July 1964
X-15 LAUNCH:	1000 28 July 1964
LAUNCH AREA:	Hidden Hills, California
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3400 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 78,000 feet
PROGRAMMED ENGINE BURN TIME:	90 seconds
PROGRAMMED ENGINE THRUST:	59,900 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

THOMPSON SCHEDULED FOR 113 X-15 FLIGHT

NASA pilot Milton O. Thompson is scheduled to fly the number three X-15 on August 11 in the 113th flight in the joint NASA-USAF-USN research program. The mission of the flight is to conduct local airflow measurements and to study heat transfer rates under different airflow conditions. The flight will also continue the investigation of boundary layer noise.

Engineers are interested in determining how much increase in the heat transfer rates will be caused by altering the airflow over the surfaces of the X-15. NASA engineers and technicians have installed four instrumented panels on the underside of the aircraft. Two of these panels are smooth and the other two have 1/4 inch steps that will alter the airflow in order that a comparison can be made.

MORE

The X-15 will be air launched near Hidden Hills, California, about 125 miles northeast of here. The planned nine minute flight should reach a peak altitude of approximately 75,000 feet and a maximum velocity of about 3420 m.p.h.

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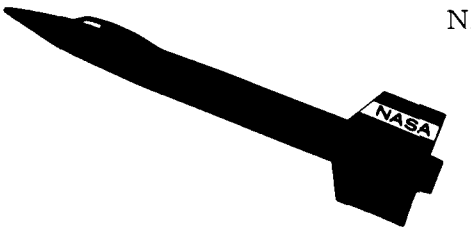
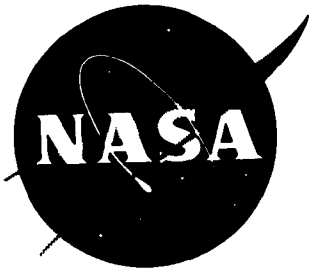


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	113 (32 for X-15 number 3)
PILOT:	Milton O. Thompson, NASA
NASA 1:	Captain Joe Engle, USAF
B-52 TAKE-OFF:	0900 ~~11~~ 12 August 1964
X-15 LAUNCH:	1000 ~~11~~ 12 August 1964
LAUNCH AREA:	Hidden Hills, California
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3420 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 75,000 feet
PROGRAMMED ENGINE BURN TIME:	90 seconds
PROGRAMMED ENGINE THRUST:	59,900 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

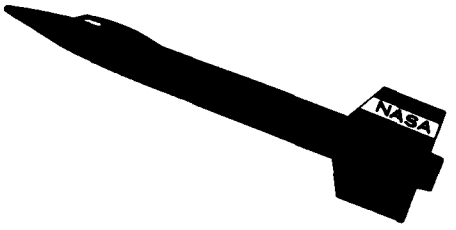
SECOND FLIGHT SCHEDULED FOR MODIFIED X-15

Engineers at the National Aeronautics and Space Administration's Flight Research Center have scheduled the second flight for the number 2 X-15 aircraft since major modifications were made to the aircraft following a landing accident in November 1962.

Air Force Astronaut Robert A. Rushworth will evaluate flight characteristics and stability at speeds in the neighborhood of 3500 m.p.h. and altitudes near 100,000 feet. The flight is part of a series of flight requalification tests being conducted on the modified aircraft. The first flight, also with Rushworth at the controls, was successfully completed June 25 when the aircraft reached an altitude of 83,000 feet and a speed of 2966 m.p.h.

The flight follows the NASA policy of increasing the speed and altitude by increments. Although the airplane looks virtually identical to the other X-15's, there are significant differences in the airplane's characteristics.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	114 (33 for X-15 number 2)
PILOT:	Major Robert A. Rushworth, USAF
NASA 1:	John B. McKay, NASA
B-52 TAKE-OFF:	0900 14 August 1964
X-15 LAUNCH:	1000 14 August 1964
LAUNCH AREA:	Mud Lake, Nevada
FLIGHT DISTANCE:	200 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3500 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 96,000 feet
PROGRAMMED ENGINE BURN TIME:	Approximately 82 seconds
PROGRAMMED ENGINE THRUST:	60,000 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 22-64
22 September 1964

FOR RELEASE: Sunday Morning
27 September 1964

NASA CONDUCTS TILT TABLE TESTS WITH LUNAR LANDING RESEARCH VEHICLE

Project pilot Joe Walker tilts the Lunar Landing Research Vehicle (LLRV) into a simulated right turn during tilt-table tests being conducted at the National Aeronautics and Space Administration's Flight Research Center. The tests are being held to ground check the electronic flight control systems in preparation for flight testing of the research vehicle later this year. The tilt-table allows the LLRV complete freedom of movement around its axes while restricting it from actual flight.

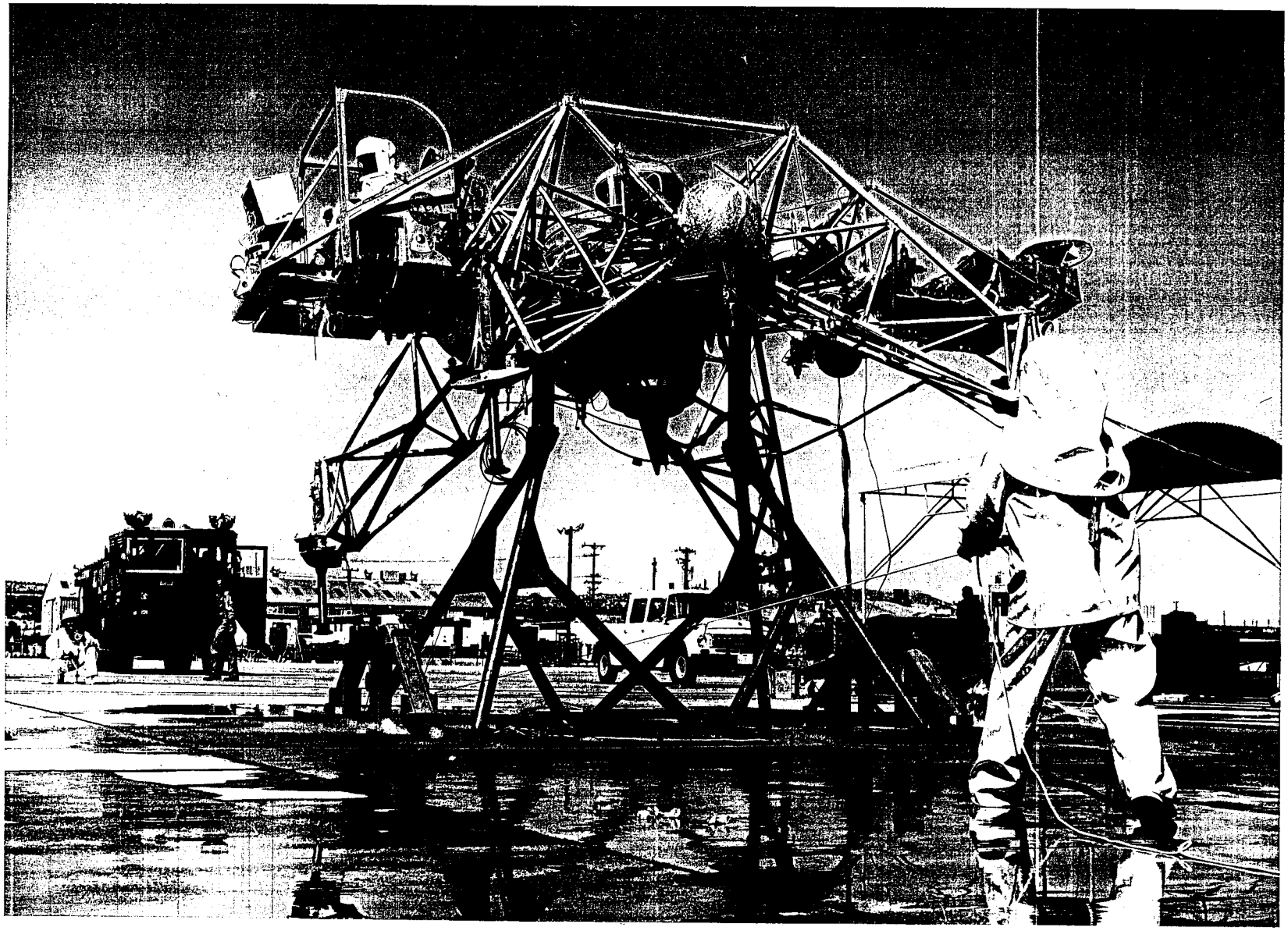
Walker and the NASA technicians wear protective clothing to shield themselves from the harmful spray of the chemicals used as propellants in the rocket motors of the LLRV.

The LLRV will be used by NASA to study the piloting and operational proceedures that will be involved during the final phases of a manned lunar landing and during the initial portion of the lunar take-off.

END

NASA

E-11940



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

ENGLE SCHEDULED FOR 117TH X-15 FLIGHT

The 117th flight in the joint NASA-USAF-USN X-15 research program is scheduled for September 23 with Air Force Captain Joe Engle as the pilot. The purpose of the flight will be to collect boundary layer noise measurements and to evaluate a new type of ablative material.

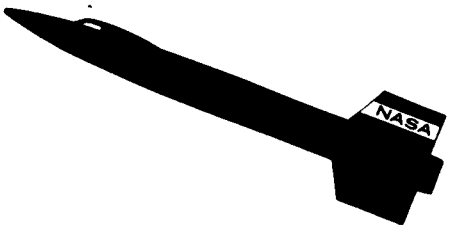
The new type of ablative material was developed by the Martin Company and is the third material to be evaluated for the purpose of reducing heat on the surfaces of the X-15. The lower portion of the vertical tail on the X-15 has been coated with the ablative material. This coating is expected to reduce the normal temperature at this location from an approximate 900 - 1000 degrees F. to about 200 - 300 degrees. The coating will be placed at several other locations on the aircraft.

MORE

A sensitive recording system will be carried on the X-15 that will allow it to record the noise level of the boundary layer of air that separates the X-15 from the free stream of air. This noise level, which is expected to be around 140 - 150 decibels, is used with other stress measurements to predict possible metal fatigue.

The X-15 will be air-launched near Delamar Lake, Nevada, 240 miles northeast of here. The flight should last about 11 minutes and attain a maximum speed of approximately 3800 m.p.h. and a peak altitude of about 99,000 feet.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	117 (35 for X-15 number 3)
PILOT:	Captain Joe Engle, USAF
NASA 1:	Milton Thompson, NASA
B-52 TAKE-OFF:	0900 23 September 1964
X-15 LAUNCH:	1000 23 September 1964
LAUNCH AREA:	Delamar Lake, Nevada
FLIGHT DISTANCE:	240 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3800 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 99,000 feet
PROGRAMMED ENGINE BURN TIME:	82 seconds
PROGRAMMED ENGINE THRUST:	59,900 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassinged
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

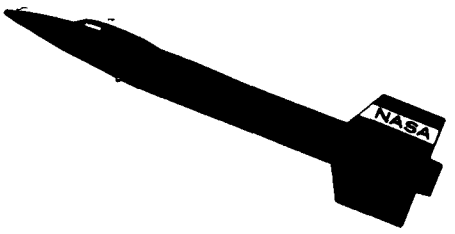
X-15 NUMBER TWO SCHEDULED FOR CHECK-OUT FLIGHT

The number two X-15 is scheduled to make another check-out flight on September 29 with Major Robert Rushworth as the pilot. This will be the third check-out flight since major modifications and repairs were made to the aircraft following a landing accident in November 1962.

The flight is programmed to check the stability and control of the aircraft. At various times during the scheduled ten-minute flight, Major Rushworth will intentionally turn off various parts of the automatic control system and make specific control movements to evaluate the stability.

The flight will be air-launched from a B-52 near Mud Lake, Nevada, about 200 miles north of here. Flight maximums of a peak altitude of approximately 92,000 feet and a maximum speed of about 3600 m.p.h. are scheduled.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	118 (34 for X-15 number 2)
PILOT:	Major Robert A. Rushworth, USAF
NASA 1:	John B. McKay, NASA
B-52 TAKE-OFF:	0900 29 September 1964
X-15 LAUNCH:	1000 29 September 1964
LAUNCH AREA:	Mud Lake, Nevada
FLIGHT DISTANCE:	200 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3600 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 92,000 feet
PROGRAMMED ENGINE BURN TIME:	Approximately 81 seconds
PROGRAMMED ENGINE THRUST:	60,000 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

NUMBER ONE X-15 RETURNS TO FLIGHT STATUS

The number one X-15 is scheduled to fly on October 8 with Jack McKay, NASA, as the pilot. This will be the first flight of the aircraft since modifications were performed to enlarge its capability to conduct high altitude flight research. The modifications were begun this past summer at NASA's Flight Research Center.

Two cylindrical compartments measuring almost five feet long and weighing about 200 lbs. each have been mounted on each wing tip of the aircraft. The left wing tip pod contains a device for the collection of micrometeorites and extraterrestrial dust. The rear of this container houses a spectrometer that will be used to measure the radiation characteristics of the daytime sky background. The right wing tip pod contains a densitron for measuring the density of the air at high altitude.

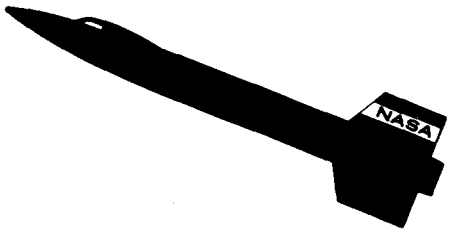
MORE

A new inertial guidance system that was originally designed for use in the X-20 Dyna Soar has also been intalled in the aircraft.

The purpose of the flight is to provide an operational checkout of the new equipment and to evaluate the flight characteristics of the aircraft with the wing tip pods installed. During the planned eight minute flight, McKay will perform several control maneuvers with the portions of the automatic control augmentation system turned off. He will also make two turns of approximately 20 degrees, first to the left and then a reversal to the right, during the later part of the flight.

This will be the 119 X-15 flight in the joint NASA-USAF-USN research program. Flight maximums of a peak altitude of approximately 80,000 feet and a maximum speed of about 3100 m.p.h. are expected.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	119 (50 for X-15 number 1)
PILOT:	John B. McKay, NASA
NASA 1:	Captain Joe H. Engle, USAF
B-52 TAKE-OFF:	0900 2 October 1964
X-15 LAUNCH:	1000 2 October 1964
LAUNCH AREA:	Hidden Hills, California
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3000 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 80,000 feet
PROGRAMMED ENGINE BURN TIME:	Approximately 75 seconds
PROGRAMMED ENGINE THRUST:	58,500 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 23-64
12 October 1964

FOR RELEASE: 16 October 1964

NASA's X-15 PROJECT MANAGER TO ADDRESS TEACHER'S ASSOCIATION

Mr. James Love, project manager of the X-15 for the National Aeronautics and Space Administration's Flight Research Center at Edwards, California will address the Kern County Retired Teacher's Association on October 20 in Bakersfield. The luncheon meeting will be held at the First Presbyterian Church.

The rocket-powered X-15 is being used to conduct aeronautical research with flights in near space. It currently holds the unofficial world speed and altitude records for manned winged vehicles with flights to a speed of 4104 miles per hour and an altitude of 354,200 feet.

As project manager, Mr. Love is responsible for the planning and execution of the X-15 flight program. A biography is attached for your use.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
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FRC NEWS RELEASE 26-64
23 October 1964

FOR RELEASE: Monday A.M.
26 October 1964

THREE NASA MEN RECEIVE COMMENDATION FROM PRESIDENT JOHNSON

Three employees at the National Aeronautics and Space Administration's Flight Research Center, Mr. John E. Reeves, Mr. Joseph Darr, and Mr. Vincent Capasso, received Presidential Citations from President Lyndon B. Johnson last week. The citations were delivered to the men by Flight Research Center Director, Paul F. Bikle.

The men were honored by the president for their "outstanding contribution to greater economy and improvement in government operations."

The three men designed and constructed a portable rocket-engine inspection cart that saved the government an estimated $150,000 last year. The cart is used to check the system operation of the YLR-99 rocket-engine that is used in the X-15 research aircraft.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 27-64
27 October 1964

FOR RELEASE: Thursday A. M.
29 October 1964

ASTRONAUT TESTS GEMINI SPACESUIT AT LOCAL NASA FACILITY

Astronaut Russel L. Schweikart completed three days of testing at the National Aeronautics and Space Administration's Flight Research Center last week as part of an operational check-out of the pressure suit that will be worn on the two man Gemini space flights that are now scheduled for early next year. During the tests and for the following several days, Schweikart remained in the Gemini pressure suit for the entire time in anticipation of actual space flights of up to two weeks in duration.

While at the local NASA facility, Schweikart made six flights in a specially instrumented high performance jet aircraft. The same type of biomedical information that will be acquired during the actual Gemini space flights was recorded during these jet flights which even included short periods of weightlessness.

MORE

The test was not only designed to examine the reliability of the biomedical sensors, but to evaluate the comfort and pilot acceptability of the suit over a long period of time. As such, Schweikart performed all of the normal human functions such as eating and sleeping while wearing the suit.

Following his tests at the Flight Research Center, the astronaut continued his suit testing with flights in a centrifuge that subjected him to high acceleration forces at NASA's Ames Research Center and to flights in the Gemini mission simulator at NASA's Manned Spacecraft Center.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

THOMPSON TO MAKE PRESSURE STUDY FLIGHT IN X-15

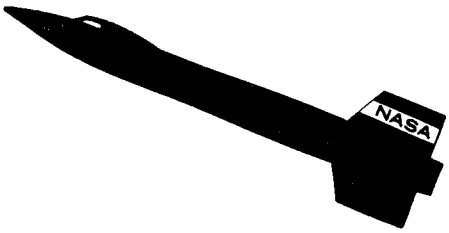
NASA research pilot Milt Thompson is scheduled to fly the number three X-15 on October 29 in the 120th flight in the joint NASA-USAF research program. The purpose of the flight is to record boundary layer noise measurements and to study air flow conditions.

The number three X-15 is equipped with a special microphone that is used to record the noise level of the boundary layer of air that separates the X-15 from the free stream of air. These measurements are used to assist in the determination of possible metal fatigue.

Pressure rakes have been mounted on the underside of the aircraft to measure the pressure of the airflow at different distances away from the X-15.

The X-15 will be air launched from a B-52 near Hidden Hills, Calif. Planned flight maximums include a speed of about 3100 m.p.h. and a peak altitude of approximately 81,000 feet. The 125 mile trip should last about eight minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	120 (36 for X-15 number 3)
PILOT:	Milton O. Thompson, NASA
NASA 1:	John B. McKay, NASA
B-52 TAKE-OFF:	0900 29 October 1964
X-15 LAUNCH:	1000 29 October 1964
LAUNCH AREA:	Hidden Hills, California
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3100 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 81,000 feet
PROGRAMMED ENGINE BURN TIME:	74 seconds
PROGRAMMED ENGINE THRUST:	58,750 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 28-64
3 November 1964

FOR RELEASE: Thursday, P.M.
5 November 1964

LUNAR LANDING RESEARCH VEHICLE MAKES FIRST FLIGHT

The first flight of the Lunar Landing Research Vehicle was described today by Joseph A. Walker, project pilot for the National Aeronautics and Space Administration's Flight Research Center. The announcement was made in Houston, Texas at the third annual Manned Space Flight meeting jointly sponsored by NASA and the American Institute of Aeronautics and Astronautics.

The LLRV is being flown at NASA's Flight Research Center, Edwards, California, to study the piloting and operational procedures involved during the final phases of a manned lunar landing and during the initial portion of the lunar take-off. The program is in support of project Apollo, which is under the general direction of NASA's Manned Spacecraft Center, Houston, Texas. The LLRV was built for NASA by Bell Aerosystems, Buffalo, New York.

MORE

Walker announced that the first flight of the LLRV on Friday, October 30, was the first of several pilot familiarization and check-out flights. Simulated lunar missions are scheduled for early next year.

Walker said that the first flight consisted of three separate take-offs and landings. Total free flight time was just under a minute with a maximum altitude attained of approximately 10 feet. He stated that he utilized only the jet engine for lift power and did not activate the lift rockets. He did, however, operate all eight of the standard control rockets for short periods of time.

The LLRV is equipped with a jet engine that can be automatically regulated to counterbalance five-sixth's of the vehicle's weight to compensate for the one-sixth gravitional difference between the moon and earth. This engine is also used to provide take-off power.

During forthcoming check-out flights, two hydrogen peroxide rocket-motors, capable of delivering from 100 to 500 lbs. of thrust each, will be used to regulate lift.

END

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 29 - 64 FOR RELEASE: IMMEDIATELY

MEMO TO EDITORS

Mr. John B. McKay, a research pilot for the National Aeronautics and Space Administration's Flight Research Center who is currently assigned to the X-15 flight program, will address the University of Kentucky Chapter of the American Institute of Aeronautics and Astronautics. The seminar, which is open to the public, will be held at the Student Center Theater in the University of Kentucky Student Center at 7:30 p.m. on Thursday November 19.

Mr. McKay is a veteran test pilot who has specialized in high speed flight research. Besides the X-15, which he has piloted over five times the speed of sound, Mr. McKay has flown such experimental aircraft as the D-558, the X-1, and the X-5. An engineer as well as a pilot, he is the author of several technical reports. A biography is attached for your use.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

X-15 TO FLY WITH STAR TRACKING EQUIPMENT

NASA research pilot Jack McKay is scheduled to fly the X-15 number two on November 6. This will be his first flight in the number two X-15 since it was modified and repaired following a landing accident in November, 1962. McKay was also the pilot during the accident.

One of the new modifications to the aircraft is the inclusion of four star tracking cameras mounted in a compartment on top of the X-15 behind the pilot's cockpit. This camera compartment is covered with clamshell doors that open upward to permit the cameras to photograph various stars.

These cameras will receive an operational checkout on this flight. However, due to the planned relatively low altitude of approximately 80,000 feet the camera compartment will remain closed. A small light has been installed in the compartment and the four cameras will take pictures of this light at different time sequences.

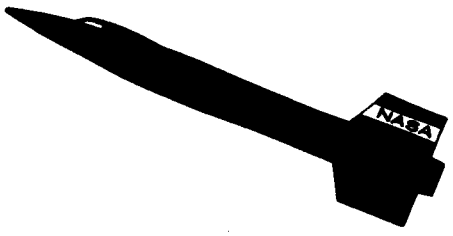
MORE

Because of the expected low temperatures, of about -50° F, electric heaters have been installed on the camera mountings.

The flight will be air launched from a B-52 near Hidden Hills, California. A maximum speed of about 3100 m.p.h. is expected. The 125 mile trip should last about 8 minutes.

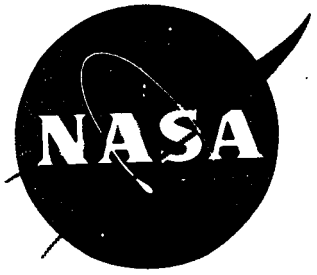
END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California



FACT SHEET

FLIGHT:	121 (35 for X-15 number 2)
PILOT:	John B. McKay, NASA
NASA 1:	Milton O. Thompson, NASA
B-52 TAKE-OFF:	0900 9 November 1964
X-15 LAUNCH:	1000 9 November 1964
LAUNCH AREA:	Hidden Hills, California
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3100 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 80,000 feet
PROGRAMMED ENGINE BURN TIME:	80 seconds
PROGRAMMED ENGINE THRUST:	58,700 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

NUMBER ONE X-15 TO MAKE SECOND FLIGHT WITH WING TIP PODS

Captain Joe Engle is scheduled to fly the number one X-15 on November 18 on the 122 flight in the joint NASA-USAF X-15 research program. This will be the second flight of the aircraft since modifications were performed on it last summer at NASA's Flight Research Center. These modifications include the installation of two wing tip pods that will be used to carry scientific instruments that will be used to conduct high altitude research.

The flight will be an operational check-out of some of the scientific equipment that is being carried in the wing tip pods. Data will be obtained from the equipment but it will be primarily used to

MORE

ensure that the equipment is performing properly.

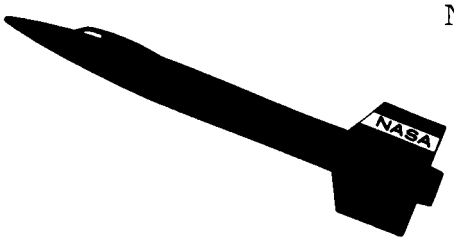
The equipment being evaluated includes a densitron in the right wing tip pod that will be used to measure the ambient density of the air at high altitudes. The left wing tip pod will carry a special spectrometer that will be used to measure the radiation characteristics and polarization of the daytime sky background.

This flight will also be the second check-out of the new inertial guidance system that was intalled in the aircraft during the modifications. The new guidance system uses a digital computer and was originally designed for use in the X-20 Dyna Soar.

The flight will also evaluate the effects of the wing tip pods at slightly faster speeds and higher altitudes that were reached on its previous flight.

The X-15 will be air-launched from a B-52 near Mud Lake, Nevada. Planned flight maximums include a peak altitude of approximately 110,000 feet and a speed of about 3400 m.p.h. The 200 mile trip should take about eight minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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Edwards, California

FACT SHEET

FLIGHT:	122 (51 for X-15 number 1)
PILOT:	Captain Joe Engle, USAF
NASA 1:	Major Robert Rushworth, USAF
B-52 TAKE-OFF:	0900 18 November 1964
X-15 LAUNCH:	1000 18 November 1964
LAUNCH AREA:	Mud Lake, Nevada
FLIGHT DISTANCE:	200 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3400 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 110,000 feet
PROGRAMMED ENGINE BURN TIME:	Approximately 77 seconds
PROGRAMMED ENGINE THRUST:	57,600 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 Clifford 8-3311 Ext: 221

FRC NEWS RELEASE 31-64
18 November 1964

FOR RELEASE: Sunday A. M.
6 December 1964

MEMORANDUM TO EDITORS

Mr. James Love, project manager of the X-15 program for the National Aeronautics and Space Administration's Flight Research Center, Edwards, California will address the Central Indiana Section of the American Institude of Aeronautics and Astronautics on Tuesday, December 9 at the Holiday Inn, Indianapolis.

The rocket-powered X-15 is being used to conduct aeronautical research with flights in near space. It currently holds the world's unofficial speed and altitude records for manned winged vehicles with flights to a speed of 4, 104 miles per hour and to an altitude of 354, 200 feet.

As project manager, Mr. Love is responsible for the planning and execution of the X-15 flight program. A biography is attached for your use.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

THOMPSON SCHEDULED FOR X-15 FLIGHT

NASA research pilot Milt Thompson is scheduled to fly the number three X-15 on December 7 in the 123 flight in the joint NASA-Air Force research program. The flight will obtain data for several basic research objectives.

Two pressure sensors are mounted at different locations on the nose of the aircraft to measure the air flow over the surfaces of the aircraft. Pressure sensing devices have also been installed on the aircraft to measure the skin friction that is caused by the air flow. A special audio system is installed on the X-15 #3 that records the

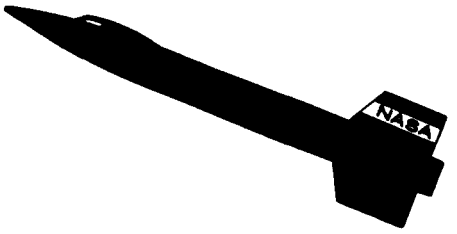
MORE

noise level of the boundary layer of the air that separates the aircraft from the free stream of air.

The lower speed brake of the aircraft will be coated with an ablative material. The flight will evaluate how well the material dissipates the high temperatures before reaching the skin of the aircraft.

The X-15 will be air launched from a B-52 near Hidden Hills, California. The flight plan calls for a peak altitude of approximately 85,000 feet and a maximum speed of about 3600 m.p.h. The 125 mile trip should last about eight minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	123 (37 for X-15 number 3)
PILOT:	Milton O. Thompson, NASA
NASA 1:	John B. McKay, NASA
B-52 TAKE-OFF:	1100 7 December 1964
X-15 LAUNCH:	1200 7 December 1964
LAUNCH AREA:	Hidden Hills, California
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3600 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 85,000 feet
PROGRAMMED ENGINE BURN TIME:	Approximately 104 seconds
PROGRAMMED ENGINE THRUST:	58,800 lbs.
SUPPORT PERSONNEL	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 32-64
7 December 1964

FOR RELEASE: IMMEDIATELY

PRESIDENT JOHNSON PRESENTS AWARDS TO TWO LOCAL MEN

President Lyndon B. Johnson presented special plaques to two Lancaster men in ceremonies held in Washington on December 4. The two men, John Reeves and Joseph A. Darr, Jr., are employees of the National Aeronautics and Space Administration's Flight Research Center and were recognized by the President for their cost reduction contribution to the government.

Mr. Darr and Mr. Reeves were cited for the design and construction of a portable engine inspection cart that is used to check the systems operation of the YLR-99 rocket engine which powered the X-15. NASA has estimated that this cart has saved 500 man-hours and about $150,000 last year.

MORE

Both men are inspectors for NASA's Flight Research Center and are attached to the quality assurance office. A third NASA man, Vincent Capasso, received a certificate from the President earlier for his participation in the contribution.

The awards program, which was part of the 10th anniversary of the US Civil Service Commission's government employees incentive award program, honored 20 federal employees from throughout the nation.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

RUSHWORTH TO FLY 124TH FLIGHT IN X-15 PROGRAM

Major Robert A. Rushworth is scheduled to fly the number three X-15 on December 17 in the 124th flight in the joint NASA-USAF research program. The objective of the flight is to collect skin friction measurements at relatively high speeds and low angles of attack. Data will also be collected for several other research programs.

Skin friction is important in the design of future aircraft for two main reasons; it causes the skin of the aircraft to heat, and, to a degree, reduces the efficiency of the aircraft by increasing the drag.

The friction measurements will be obtained by two methods. Panels with a movable center element will measure friction at local areas while pressure rakes will measure the distribution of the friction over the surfaces of the aircraft.

MORE

Each of two panels on the nose of the X-15 has been coated with a different type of ablative material to obtain a comparison between the two. The test is part of an evaluation that is being made of different ablative materials that will be used to reduce the skin temperatures on future high speed X-15 flights.

The flight will be air-launched from a B-52 near Hidden Hills, California. Flight maximums of a speed of approximately 3550 m.p.h. and an altitude of about 80,000 feet are planned. The 125 mile trip should last about seven minutes.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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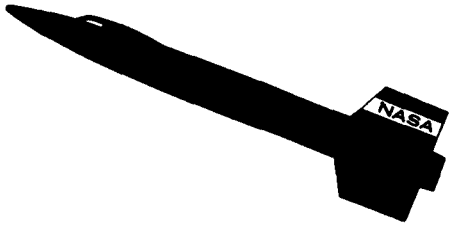


FACT SHEET

FLIGHT:	124 (38 for X-15 number 3)
PILOT:	Major Robert A. Rushworth, USAF
NASA 1:	Captain Joe Engle, USAF
B-52 TAKE-OFF:	0900 17 December 1964
X-15 LAUNCH:	1000 17 December 1964
LAUNCH AREA:	Hidden Hills, California
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3550 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 80,000 feet
PROGRAMMED ENGINE BURN TIME:	101 seconds
PROGRAMMED ENGINE THRUST:	58,800 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER, Edwards, Calif.
Telephone: 805 CLifford 8-3311 Ext: 221

FRC NEWS RELEASE 33-64
24 December 1964

FOR RELEASE: Tuesday a.m.
29 December 1964

NASA TO BUILD HEAT TESTING FACILITY

The National Aeronautics and Space Administration's Flight Research Center, Edwards, California, is requesting bids for the construction of a high temperature heat facility. The administration of the contract is being performed by the US Army Engineers District, Los Angeles, who issued the requests for proposals today.

The completed facility would include enough test area, approximately 20,000 square feet, to permit heat load testing of actual aircraft of the size of the XB-70 and the proposed supersonic transport. A concrete taxiway will be constructed to allow easy access to the hangar-type building.

When completely operational, the facility will be capable of producing temperatures up to 3,000 degrees F. on small isolated areas

MORE

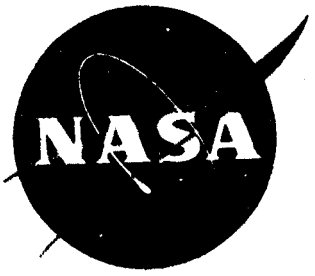
of the test aircraft. It is expected that large areas, such as the major portion of the SST wing, can be heated up to about 600 degrees.

Electrically controlled hydraulic equipment will be used to induce simulated aerodynamic loads during the high temperature tests.

Temperature and loads measurements will be recorded on approximately 1200 channels of data acquisition equipment.

Closing date for the submission of bids is January 28, 1965. A fixed price contract is expected to be awarded by early February. Construction is expected to take about 10 months.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

THOMPSON SCHEDULED FOR X-15 FLIGHT

NASA research pilot Milton Thompson is scheduled to fly the number three X-15 on January 12 in the 125th flight in the joint NASA-USAF research program. The flight is scheduled to collect air flow data for several research programs.

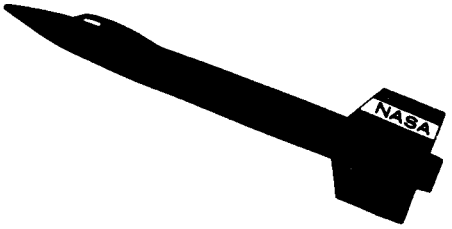
Special recording instruments have been mounted on the X-15 to measure the air flow over the surfaces of the aircraft. Other devices will record the skin friction measurements caused by this air flow.

Two instrumented panels, one with a smooth surface and one with a wavy surface, have been installed side-by-side on the X-15. Heat transfer rates will be measured on both panels. These measurements will then be compared to see what differences are caused by distorting the air flow.

MORE

The X-15 will be air launched from a B-52 near Hidden Hills, California. Flight maximums of a speed of approximately 3500 miles per hour and a peak altitude of about 92,000 feet are planned. The 125 mile trip should take about eight minutes.

END



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
FLIGHT RESEARCH CENTER
Edwards, California

FACT SHEET

FLIGHT:	125 (39 for X-15 number 3)
PILOT:	Milton O. Thompson, NASA
NASA 1:	Captain Joe Engle, USAF
B-52 TAKE-OFF:	1000 January ~~12~~ ??, 1965
X-15 LAUNCH:	1100 January ~~12~~ ??, 1965
LAUNCH AREA:	Hidden Hills, California
FLIGHT DISTANCE:	125 miles
PROGRAMMED MAXIMUM SPEED:	Approximately 3500 m.p.h.
PROGRAMMED MAXIMUM ALTITUDE:	Approximately 92,000 feet
PROGRAMMED ENGINE BURN TIME:	90 seconds
PROGRAMMED ENGINE THRUST:	57,500 lbs.
SUPPORT PERSONNEL:	
B-52 PILOT	Unassigned
LAUNCH PANEL	Unassigned
CHASE PILOTS	Unassigned
PRIME CONTRACTOR (Air Frame):	North American Aviation, Inc.
PRIME CONTRACTOR (Power Plant):	Thiokol Chemical Corporation